Item No. 49-1
Mr. Caplinger
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

ADDITION OF GENERAL NOTE 11.

11. This specification book uses the word "shall" to describe the Contractor's responsibilities. The word "will" is used to describe the Department's responsibilities. The words "shall" and "will" are not required to be followed by the words "by the Contractor" or "by the Department" to retain these meanings.

It is also proposed that the contents of the General Notes be moved from the front of the book and placed in Section 101.02 or 101.03. If the committee agrees with this proposal, the secretary will be directed to develop a scheme for a member to present to the committee.

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Additional or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 105, BEGIN LINE 189, INSERT AS FOLLOWS:

The Contractor shall be responsible for the accuracy of transfer from the control lines and grades and layout of the work. *The Engineer will notify the District Traffic Division to locate all existing underground traffic signal and lighting wiring. The District Traffic Division will only perform this locate service once per construction season per contract.* The Contractor shall also be responsible for the preservation of all stakes and marks. If the construction stakes or marks are carelessly or willfully destroyed or disturbed by the Contractor or its employees, the cost to the Department for replacing them will be charged against the Contractor. Such costs will be deducted from payment for the work.

SECTION 105, BEGIN LINE 207, INSERT AS FOLLOWS:

(b) Construction Engineering by the Contractor. If set out as a pay item, the construction engineering, including all staking and layout usually done by the Department, shall be performed by the Contractor. Construction engineering shall include re-establishing the survey points and survey centerlines; referencing the necessary control points; running a level circuit to check or re-establish plan bench marks; running a level circuit to establish elevations on new bench mark tablets; setting stakes for right-of-way, culverts, slopes, subbase, subsurface drains, paving, subgrade, bridge piers, abutments, and all other stakes required for control lines and grades; and setting vertical control elevations, such as footings, caps, bridge seats, and screed elevations. *Construction engineering shall also include documenting the underground wiring as located by the District Traffic Division.*

Upon request by the Contractor, the Engineer will notify the District Traffic Division to locate all existing underground traffic signal and lighting wiring. The District Traffic Division will only perform this locate service once per construction season per contract. The required documentation shall be performed and a copy provided to the Engineer as soon as practical after the locations have been marked. Documentation which is not provided to the Engineer in a timely manner shall not be considered valid for the purpose of resolving conflicts related to the accuracy of the locate service. The documentation may be digital pictures, regular photos, or sketches of the areas marked. The documentation shall be such that the underground wiring can be easily and accurately re-established in the field by the Contractor, if needed.

A complete cross section shall be taken at each 150 m (500 ft) interval. Horizontal control shall be checked at the beginning and ending of the mainline and all "S" lines. This information shall be used to verify that the planned alignment and elevations will match existing conditions. Required alignments and

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 105, CONTINUED.

Other sections containing specific cross references:

None

Recurring Special Provisions potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

General Instructions to Field Employees
Update Required? Y___ N___
By - Additional or Revision

Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Standard Sheets potentially affected:

None

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 108, BEGIN LINE 312, INSERT AS FOLLOWS:

The number of days for performance permitted in the contract as awarded will be based on the original quantities as defined in 104.02.

(a) For a completion date contract, unless otherwise determined, an increase in quantities will increase the time permitted for the performance of the contract by the ratio of the final contract price to the original contract price. *The final contract price used in the calculation will not include items that do not reflect additional work performed by the Contractor, such as bonus incentives, disincentives, QA adjustments, failed material adjustments, or other similar items.* The contract time shall be the number of calendar days starting with the day after the letting, to and including the original contract completion date.

(b) If intermediate completion times are specified, unless otherwise determined, an increase in quantities will increase the time permitted. This will be computed by the ratio of the original dollar amounts to the final dollar amounts of only those pay items which are involved in the closure or restrictions work. *Items that do not reflect additional work performed by the Contractor, such as bonus incentives, disincentives, QA adjustments, failed material adjustments, or other similar items will not be included in the final dollar amounts of the pay items used in the computation.* When computing such time, the number of days specified for the intermediate completion time will be used. If a calendar date is specified, the number of calendar days will be computed by starting with the day after the letting, and continuing to and including the intermediate completion date.

Other sections containing specific cross references:

108.02 Pg 126
108.08 Pg 135
111.09 Pg 154

Recurring Special Provisions potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

General Instructions to Field Employees
Update Required? Y___ N___
By - Additional or Revision
Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Standard Sheets potentially affected:

None

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

-----Original Message-----
From: KUCHLER, DENNIS
Sent: Friday, May 21, 2004 10:49 AM
To: SMITH, DAN
Subject: FW: Proposed Revised Section 108.07

Dan, Please place this on whatever Standards Agenda you wish. Dennis

-----Original Message-----
From: JAMES, JEFFREY
Sent: Friday, May 21, 2004 10:26 AM
To: KUCHLER, DENNIS
Subject: RE: Proposed Revised Section 108.07

Dennis,

Does the attached draft revised specification incorporate your comments as you wish?

Thanks,

Jeffrey G. James, P.E.
Construction Field Engineer
INDOT-Contracts & Construction Division
Phone: 317/232-5082
Cell: 317/697-5946
Fax: 317/232-5551

-----Original Message-----
From: KUCHLER, DENNIS
Sent: Friday, May 21, 2004 9:18 AM
To: JAMES, JEFFREY
Subject: RE: Proposed Revised Section 108.07

Jeff, What about disincentives? You cover incentives, bonuses, and LDs but wouldn't a disincentive be different that and LD and also not be used in the calculations? When to re-send change the red to italics please. It will be easier when printed out to read the changes. Thanks Dennis

-----Original Message-----
From: JAMES, JEFFREY
Sent: Thursday, May 13, 2004 2:38 PM
To: KUCHLER, DENNIS
Subject: Proposed Revised Section 108.07

Dennis,

I have attached a draft revised Section 108.07 for your review and comment. This revision is based on the discussion at our winter construction conference.

If the draft is acceptable to you, you can forward it to Dan Smith for inclusion on an upcoming Standards Committee agenda.

Thanks,

Jeffrey G. James, P.E.
Construction Field Engineer
INDOT-Contracts & Construction Division
Phone: 317/232-5082
Cell: 317/697-5946
Fax: 317/232-5551

Item No. 49-4
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 302, BEGIN LINE 52, INSERT AS FOLLOWS:

Construction traffic shall not be allowed on the aggregate drainage layer, except where placement is restricted. Exceptions shall be submitted for approval. All displacement or rutting of the aggregate drainage layers shall be repaired prior to placing subsequent material.

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 401, BEGIN LINE 714, DELETE AND INSERT AS FOLLOWS:

Standard Practice for ~~Short and Long Term~~ Mixture Conditioning ~~Aging~~ of Hot-Mix Asphalt (HMA)…… AASHTO R 30

Standard Practice for ~~Designing~~ Superpave Volumetric Design for Hot Mix Asphalt (HMA)……AASHTO PP 28

Maximum Specific Gravity and Density of Bituminous Paving Mixtures ……AASHTO T 209

Resistance of Compacted ~~Bituminous~~ Asphalt Mixture to Moisture Induced Damage……AASHTO T 283

Method for Preparing and Determining the Density of Hot Mix Asphalt (HMA) Specimens by Means of the ~~SHRP~~ Superpave Gyratory Compactor……AASHTO T 312

SECTION 401, BEGIN LINE 737a, DELETE AND INSERT AS FOLLOWS:

Open Graded, Mixture Designation – Control Point (Percent Passing)		
	~~C19.0~~ OG19.0	*~~C25.0~~ OG25.0*

SECTION 401, BEGIN LINE 754, DELETE AND INSERT AS FOLLOWS:

Dense graded mixture shall be tested for moisture susceptibility in accordance with AASHTO T 283 except that the loose mixture curing shall be replaced by ~~short term aging~~ mixture conditioning for 2 h in accordance with AASHTO R 30. The minimum tensile strength ratio, TSR, shall be 80%. The 150 mm (6 in.) mixture specimens shall be compacted in accordance with AASHTO T 312. If anti-stripping additives are added to the mixture to be in accordance with the minimum TSR requirements, the dosage rate shall be submitted with the DMF.

The MAF equals the Gmm from the mixture design divided by the following: 2.465 for 9.5 mm mixtures and 2.500 for 12.5 mm, 19.0 mm, and 25.0 mm mixtures. If the MAF calculation results in a value where ~~0.960~~ 0.980 ≤ MAF ≤ ~~1.040~~ 1.020, then the MAF shall be considered to be 1.000. If the calculated MAF is outside of the above range, then the actual calculated value shall be used. The MAF does not apply to OG mixtures.

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 401, BEGIN LINE 783a, DELETE AND INSERT AS FOLLOWS:

VOIDS IN MINERAL AGGREGATE (VMA) CRITERIA @ N_{des}	
Mixture Designation	*Minimum VMA, Percent*
4.75 mm	*16.0*
9.5 mm	*15.0*
12.5 mm	*14.0*
19.0 mm	*13.0*
25.0 mm	*12.0*
~~C19.0~~ OG19.0 mm	*NA*
~~C25.0~~ OG25.0 mm	*NA*

SECTION 401, BEGIN LINE 791, DELETE AND INSERT AS FOLLOWS:

Note 4: For ~~C19.0~~ OG19.0 mm and ~~C25.0~~ OG25.0 mm mixtures, VFA is not applicable.

Other sections containing specific cross references:

304.05 Pg 307 SS
401.04 Pg 401 SS
401.06 Pg 406 SS
402.05 Pg 420 SS
718.02 Pg 721 SS

Recurring Special Provisions potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision
Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Standard Sheets potentially affected:

None

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

Item No. 49-6
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 401, BEGIN LINE 809, DELETE AND INSERT AS FOLLOWS:

~~*Mainline surface or open graded mixtures shall not contain recycled materials.*~~ *Recycled materials shall not be used in Category 3, 4, or 5 surface mixtures or open graded mixtures.*

Other sections containing specific cross references:

None

Recurring Special Provisions potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision
Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Standard Sheets potentially affected:

None

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

Item No. 49-7
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 401, BEGIN LINE 858, DELETE AND INSERT AS FOLLOWS:

The bulk specific gravity of gyratory specimens for dense graded mixtures will be determined in accordance with AASHTO T 166 except samples are not required to be dried overnight. The bulk specific gravity of gyratory specimens for open graded mixtures, ~~C19.0~~ OG19.0, ~~C25.0~~ OG25.0 will be determined in accordance with ASTM D 6752, except as follows. The duration of the test from initiating the vacuum extraction to weighing the specimen after the water bath will not exceed five minutes. The mass of water absorbed by the specimen while in the water bath will be subtracted from the mass of the specimen obtained in the water bath. Any test in which the mass of water absorbed by the specimen exceeds ~~2% of the sample mass~~ 5 g is invalid.

SECTION 401, BEGIN LINE 880, DELETE AND INSERT AS FOLLOWS:

The Engineer's acceptance test results for each sublot will be available ~~when~~ after the sublot and testing ~~is~~ are complete.

SECTION 401, BEGIN LINE 1045, DELETE AND INSERT AS FOLLOWS:

The Engineer's acceptance test results for each sublot will be available when the sublot testing is complete. Acceptance of the pavement for density (%MSG) will be reported to the nearest 0.1%. Rounding will be in accordance with 109.01(a).

Other sections containing specific cross references:

401.16 Pg 410 SS
401.20(d) Pg 417 SS

Recurring Special Provisions potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision
Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Standard Sheets potentially affected:

None

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 401, BEGIN LINE 1052, DELETE AND INSERT AS FOLLOWS:

401.18 Pavement Smoothness. *The pavement smoothness will be accepted by means of a profilograph, a 4.9 m (16 ft) long straightedge, or a 3 m (10 ft) long straightedge.*

The profilograph shall be used where all of the following conditions are met:

(a) the design speed is greater than 70 km/h (45 mph),

(b) the pavement lanes are full width and ~~75 m (250 ft)~~ 0.16 km (0.1 mi.) or longer, and

(c) the HMA is placed on a milled surface or the total planned lay rate is ~~180~~ 210 kg/m² (~~330~~ 385 lb/syd) or greater.

If a pay item, profilograph, HMA, is included in the contract and the above conditions are met, the Contractor shall furnish, calibrate, and operate an approved profilograph in accordance with ITM 901. The profilogram produced shall become the property of the Department. The profilograph shall remain the property of the Contractor. When a ~~profilograph~~, HMA, is not included as a pay item, and the above conditions are met, the Department will furnish, calibrate, and operate the profilograph.

Within the limits of a smoothness section where the posted speed is 65 km/h (40 mph) or less, smoothness of that section may be measured by a profilograph or a 4.9 m (16 ft) long straightedge. The Contractor shall notify the Engineer of the selected process prior to placement of the HMA. Smoothness pay adjustments are only applicable when measured by a profilograph.

The 4.9 m (16 ft) long straightedge shall be used on overlays where the profilograph is not specified. The 4.9 m (16 ft) long straightedge shall be used on all full width pavement lanes shorter than ~~75 m (250 ft)~~ 0.16 km (0.1 mi.), on tapers, within 15 m (50 ft) of ~~bridge ends~~ a reinforced concrete bridge approach, and within 15 m (50 ft) of an existing pavement, which is being joined.

SECTION 401, BEGIN LINE 1095, DELETE AND INSERT AS FOLLOWS:

When the profilograph is being used on a surface course, in addition to the requirements for the profile index, all areas having a high or low point deviation in excess of 8 mm (0.3 in.) shall be corrected. Courses underlying the surface courses that are exposed by corrective actions shall be milled to 25 mm (1 in.) and replaced with the same surface materials. The initial profile index shall be determined prior to any corrective action. The final profile index will be determined after all corrective action has been completed.

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 401, CONTINUED.

Other sections containing specific cross references:

402.18 Pg 426 SS

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision

Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Recurring Special Provisions potentially affected:

None

Standard Sheets potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

Item No. 49-9
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 401, BEGIN LINE 1126, DELETE AND INSERT AS FOLLOWS:

The sublot quality assurance adjustment for mixture properties and density is calculated as follows.

$$q = ~~\sum~~ L \times U \times (SCPF - 1.00)/\underline{MAF}$$

where:

q = quality assurance adjustment ~~quantity~~ for the sublot
L = ~~subot~~ sublot quantity
U = unit price for the material, $/Mg ($/TON)
SCPF = sublot composite pay factor

~~*The quality assurance adjustment points for smoothness will be calculated in accordance with 401.19(c).*~~

~~*The total quality assurance adjustments is to be calculated as follows:*~~

~~$$Q = Q_s + (\sum q)/MAF$$~~

~~*where:*~~

~~*Q = total quality assurance adjustment quantity*~~
~~*Q_s = quality assurance adjustment for smoothness as calculated in 401.19(c)*~~
~~*q = quality assurance adjustment quantity*~~

Other sections containing specific cross references:

401.22 Pg 417 SS

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision
Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Recurring Special Provisions potentially affected:

None

Standard Sheets potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

Item No. 49-10
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 401, BEGIN LINE 1152a, DELETE AND INSERT AS FOLLOWS:

~~BINDER CONTENT~~	
~~Deviation from JMF (± %)~~	~~Pay Factor~~
~~≤ 0.2~~	~~1.05~~
~~> 0.2 and ≤ 0.3~~	~~1.04~~
~~> 0.3 and ≤ 0.4~~	~~1.02~~
~~> 0.4 and ≤ 0.5~~	~~1.00~~
~~> 0.5 and ≤ 0.6~~	~~0.95~~
~~>0.6 and ≤ 0.7~~	~~0.90~~
~~> 0.7 and ≤ 0.8~~	~~0.85~~
~~> 0.8~~	~~0.85 - 0.05 per each 0.1% over 0.8%~~

BINDER CONTENT		
DENSE GRADED	OPEN GRADED	PAY FACTOR
Deviation from JMF (± %)	Deviation from JMF (± %)	Pay Factor
≤ 0.2	≤ 0.2	1.05
0.3	0.3	1.04
0.4	0.4	1.02
0.5	0.5	1.00
0.6	0.6	0.95
0.7	0.7	0.90
0.8	0.8	0.85
> 0.8	> 0.8	0.85 – 0.05 per each 0.1% over 0.8%

~~VMA~~	
~~Deviation from JMF (± %)~~	~~Pay Factor~~
~~DENSE GRADED~~	
~~≤ 0.5~~	~~1.05~~
~~> 0.5 and ≤ 1.0~~	~~1.00~~
~~> 1.0 and ≤ 1.5~~	~~0.95~~
~~> 1.5 and ≤ 2.0~~	~~0.90~~
~~> 2.0 and ≤ 2.5~~	~~0.85~~
~~> 2.5~~	~~0.85 - 0.02 per each 0.1% over 2.5%~~
~~OPEN GRADED~~	
~~All~~	~~1.00~~

VMA		
DENSE GRADED	OPEN GRADED	PAY FACTOR
Deviation from JMF (± %)	Deviation from JMF (± %)	Pay Factor
≤ 0.5		1.05
> 0.5 and ≤ 1.0	All	1.00
> 1.0 and ≤ 1.5		0.95
> 1.5 and ≤ 2.0		0.90
> 2.0 and ≤ 2.5		0.85
> 2.5		0.85 – 0.02 per each 0.1% over 2.5%

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 401, CONTINUED.

~~*AIR VOIDS*~~	
~~*Deviation from JMF (± %)*~~	~~*Pay Factor*~~
~~*DENSE GRADED*~~	
~~*≤ 0.5*~~	~~*1.05*~~
~~*> 0.5 and ≤ 1.0*~~	~~*1.00*~~
~~*> 1.0 and ≤ 1.5*~~	~~*0.95*~~
~~*> 1.5 and ≤ 2.0*~~	~~*0.85*~~
~~*> 2.0*~~	~~*Submitted to the Materials and Tests Division*~~
~~*OPEN GRADED*~~	
~~*≤ 1.0*~~	~~*1.05*~~
~~*> 1.0 and ≤ 3.0*~~	~~*1.00*~~
~~*> 3.0 and ≤ 3.5*~~	~~*0.95*~~
~~*> 3.5 and ≤ 4.0*~~	~~*0.85*~~
~~*> 4.0*~~	~~*Submitted to the Materials and Tests Division*~~

AIR VOIDS		
DENSE GRADED	*OPEN GRADED*	*PAY FACTOR*
Deviation from JMF (± %)	*Deviation from JMF (± %)*	*Pay Factor*
≤ 0.5	*≤ 1.0*	*1.05*
> 0.5 and ≤ 1.0	*> 1.0 and ≤ 3.0*	*1.00*
> 1.0 and ≤ 1.5	*> 3.0 and ≤ 3.5*	*0.95*
> 1.5 and ≤ 2.0	*> 3.5 and ≤ 4.0*	*0.85*
> 2.0	*> 4.0*	*Submit to Materials and Tests Division**

Other sections containing specific cross references:

401.09 Pg 408 SS

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision
Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Recurring Special Provisions potentially affected:

None

Standard Sheets potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

Item No. 49-11
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 401, BEGIN LINE 1164a, DELETE AND INSERT AS FOLLOWS:

DENSITY		
Percentages are based on %MSG	*Pay Factors – Percent*	
Dense Graded	*Open Graded*	
≥ 97.0		*Submitted to the Materials and Tests Division**
95.6 - 96.9		*1.05 - 0.01 for each 0.1% above ~~95.6~~ 95.5*
94.0 - 95.5		*1.05*
93.1 - 93.9		*1.00 + 0.005 for each 0.1% above ~~93.1~~ 93.0*
92.0 - 93.0	*84.0*	*1.00*
91.0 - 91.9		*1.00 - 0.003 for each 0.1% below 92.0*
90.0 - 90.9		*0.97 - 0.012 for each 0.1% below 91.0*
89.0 - 89.9		*0.85 - ~~0.015~~ 0.030 for each 0.1% below 90.0*
≤ 88.9		*Submitted to the Materials and Tests Division**

** Test results will be considered and adjudicated as a failed material in accordance with normal Department practice as listed in 105.03.*

Other sections containing specific cross references:

401.16 Pg 411 SS

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision
Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Recurring Special Provisions potentially affected:

None

Standard Sheets potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

Item No. 49-12
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 401, BEGIN LINE 1183, DELETE AND INSERT AS FOLLOWS:

~~*N*~~*n* = *number of layers*

SECTION 401, BEGIN LINE 1200, INSERT AS FOLLOWS:

The total quality assurance adjustments is to be calculated as follows:

$$Q = Q_s + (\sum q)$$

where:

Q = *total quality assurance adjustment*
Q_s = *quality assurance adjustment for smoothness*
q = *sublot quality assurance adjustment*

Other sections containing specific cross references: 401.19 Pg 413 SS	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

Item No. 49-13
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 401, BEGIN LINE 1233, INSERT AS FOLLOWS:

401.21 Method of Measurement. *HMA mixtures will be measured by the megagram (ton) of the type specified, in accordance with 109.01(b). The ~~mass (weight) accepted for payment~~ measured quantity will be divided by the MAF to determine the ~~accepted~~ pay quantity.*

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

Item No. 49-14
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 402, BEGIN LINE 474, DELETE AND INSERT AS FOLLOWS:

PG 64-28, PG 70-22, PG 76-22 ……902.01(a)*

Other sections containing specific cross references:

None

Recurring Special Provisions potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision

Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Standard Sheets potentially affected:

None

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

Item No. 49-15
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 402, BEGIN LINE 501, DELETE AND INSERT AS FOLLOWS:

The MAF equals the Gmm from the mixture design divided by the following: 2.465 for 9.5 mm mixtures and 2.500 for 12.5 mm, 19.0 mm, and 25.0 mm mixtures. If the MAF calculation results in a value where ~~0.960~~ 0.980 ≤ MAF ≤ ~~1.040~~ 1.020, then the MAF shall be considered to be 1.000. If the calculated MAF is outside of the above range, then the actual calculated value shall be used.

Other sections containing specific cross references:

304.04 Pg 306 SS
304.05 Pg 307 SS
402.03 Pg 419 SS
402.04 Pg 419 SS
402.07(a) Pg 420 SS
402.07(c) Pg 420 SS
402.07(d) Pg 421 SS
503.03(e) Pg 528 SS
507.05(b) Pg 542 SS
604.07(c) Pg 613 SS

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision

Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Recurring Special Provisions potentially affected:

None

Standard Sheets potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

Item No. 49-16
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 402, BEGIN LINE 537, DELETE AND INSERT AS FOLLOWS:

(d) Composition Limits for HMA Curbing Mixes. *The mixture shall be HMA surface type A in accordance with 402 except 402.05 shall not apply and ~~no~~ RAP shall <u>not</u> be used. The binder content shall be 7.0% and the gradations shall meet the following.*

Other sections containing specific cross references: 605.07(c) Pg 617 SS	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

Item No. 49-17
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 402, BEGIN LINE 799, DELETE AND INSERT AS FOLLOWS:

402.19 Method of Measurement. *HMA mixtures will be measured by the megagram (ton) of the type specified, in accordance with 109.01(b). The ~~mass (weight) accepted for payment~~ measured quantity will be divided by the MAF to determine the ~~accepted~~ pay quantity.*

Other sections containing specific cross references:

801.17 Pg 816 SS

Recurring Special Provisions potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision
Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Standard Sheets potentially affected:

None

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

Item No. 49-18
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 404, BEGIN LINE 148, DELETE AS FOLLOWS:

404.06 Preparation of Surface. *Surfaces to be sealed shall be brought to proper section and grade, compacted, cleaned as required, and approved.* ~~*Aggregate surfaces to be sealed shall be primed in accordance with 406.*~~

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

Item No. 49-19
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 408, BEGIN LINE 212, DELETE AND INSERT AS FOLLOWS:

408.02 Materials. *Materials shall be in accordance with the following:*

Asphalt Emulsion for
Crack Sealing, AE-90, AE-90S, AE-150 ……902.01(b)
Fine Aggregates, No. 23 or 24 ……904
~~*Sealant for Routed Cracks and Joints……ASTM D 3405*~~
Joint Sealing Materials ……906.02

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

Item No. 49-20
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 408, BEGIN LINE 221, DELETE AND INSERT AS FOLLOWS:

408.03 Equipment. *A distributor in accordance with 409.03 shall be used when crack sealing and an indirect-heat double boiler kettle with mechanical agitator shall be used when routing and ~~sealing~~ filling. Air compressors shall be capable of producing a minimum air pressure of 690 kPa (100 psi).*

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

Item No. 49-21
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 408, BEGIN LINE 226, INSERT AS FOLLOWS:

408.04 Weather Limitations. *Sealing or filling operations shall not be conducted on a wet surface, when the ambient temperature is below 4°C (40°F), or when other unsuitable conditions exist, unless approved by the Engineer.*

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

Item No. 49-22
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 408, BEGIN LINE 221, DELETE AND INSERT AS FOLLOWS:

***408.05 Routing and Filling Cracks and Joints**. Cracks and joints shall be routed when specified, with a vertical-spindle router with carbide-tipped or diamond router bits to form a reservoir not exceeding 13 mm ~~x 13 mm~~ (0.5 in. ~~x 0.5 in.~~) wide with a minimum depth of 19 mm (0.75 in.)~~, when required~~. The operation shall be coordinated such that routed materials do not encroach on pavement lanes carrying traffic and all routed materials are disposed of in accordance with 104.07. Cracks and joints shall be filled with asphalt rubber in accordance with the manufacture recommendations within 7 mm (0.25 in.) of the surface.*

Other sections containing specific cross references:

None

Recurring Special Provisions potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision
Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Standard Sheets potentially affected:

None

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

Item No. 49-23
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 408, BEGIN LINE 250, DELETE AND INSERT AS FOLLOWS:

408.07 Method of Measurement. *Sealing and filling of cracks and joints in asphalt pavements will be measured by the megagram (ton) of ~~asphalt~~ material used. Routing of cracks and joints will not be measured.*

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

Item No. 49-24
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 408, BEGIN LINE 257, DELETE AND INSERT AS FOLLOWS:

408.08 Basis of Payment. *Sealing and filling of cracks and joints in asphalt pavements will be paid for by the megagram (ton) of ~~asphalt~~ material used for the type specified.*

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 410, BEGIN LINE 1, DELETE AND INSERT AS FOLLOWS:

~~SECTION 410 – Blank~~

SECTION 410 – QUALITY CONTROL/QUALITY ASSURANCE, QC/QA, HMA SURFACE – SMA PAVEMENT

410.01 Description. *This work shall consist of one course of QC/QA HMA Surface – SMA mixture constructed on prepared foundations in accordance with 105.03.*

410.02 Quality Control. *The SMA mixture shall be supplied from a certified HMA plant in accordance with ITM 583; Certified Volumetric Hot Mix Asphalt Producer Program. The QCP shall be modified to include the requirements for the SMA mixtures. The SMA shall be transported and placed according to a Quality Control Plan, QCP, prepared and submitted by the Contractor in accordance with ITM 803; Contractor Quality Control Plans for Hot Mix Asphalt Pavements. The QCP shall be submitted to the Engineer at least 15 days prior to commencing SMA paving operations*

MATERIAL

410.03 Materials. *Materials shall be in accordance with the following:*

Asphalt Materials
PG Binder, PG 76-22, PG 70-22 ..... 902.01(a)
Coarse Aggregates, Class AS 904
Stabilizing Additive ..... AASHTO MP 8
Fine Aggregates (sand, mineral filler) 904

410.04 Design Mix Formula. *A design mix formula, DMF, shall be prepared in accordance with 410.05 and submitted in a format acceptable to the Engineer one week prior to use. The DMF shall state the maximum particle size in the mixture. The DMF shall state the calibration factor, test temperature and absorption factors to be used for the determination of binder content using the ignition oven in accordance with ITM 586, the binder content by extraction in accordance with ITM 571, and a Mixture Adjustment Factor (MAF). The DMF shall state the source, type, dosage rate of any stabilizing additives. Approval of the DMF will be based on the ESAL and mixture designation. A mixture number will be assigned by the Engineer. No mixture will be accepted until the DMF has been approved.*

The ESAL category identified in the pay item correlates to the following ESAL ranges:

ESAL CATEGORY	ESAL
1	< 300,000
2	300,000 to < 3,000,000
3	3,000,000 to < 10,000,000
4	10,000,000 to < 30,000,000
5	≥ 30,000,000

410.05 SMA Mix Design. The DMF shall be determined for each mixture from a SMA mix design by a design laboratory selected from the Department's list of Approved Mix Design Laboratories. A SMA mixture shall be designed in accordance with the respective AASHTO references as listed below.

Standard Practice for Designing
Stone Matrix Asphalt (SMA)..... AASHTO PP 41

Standard Practice for Mixture Conditioning
of Hot-Mix Asphalt (HMA) ..... AASHTO R 30

Standard Specification for Designing
Stone Matrix Asphalt (SMA)..... AASHTO MP 8

Determining the Plastic Limit and Plasticity
Index of Soils ..... AASHTO T 90

Maximum Specific Gravity and Density of Bituminous
Paving Mixtures ..... AASHTO T 209

Resistance of Compacted Asphalt Mixture to
Moisture Induced Damage..... AASHTO T 283

Determination of Draindown Characteristics
in Uncompacted Asphalt Mixtures ..... AASHTO T 305

Method for Preparing and Determining the
Density of Hot Mix Asphalt (HMA)
Specimens by Means of the Superpave
Gyratory Compactor..... AASHTO T 312

Method for Viscosity Determination of Asphalt Binder
Using Rotational Viscometer..... AASHTO T 316

The single percentage of aggregate passing each required sieve shall be within the limits of the following gradation table.

SMA Gradation Control Limits (Percent Passing by Volume)				
	Mixture Designation			
	9.5 mm		12.5 mm	
Sieve Size	Lower	Upper	Lower	Upper
25.0 mm				
19.0 mm			100.0	100.0
12.5 mm	100.0	100.0	90.0	99.0
9.5 mm	70.0	95.0	50.0	85.0
4.75 mm	30.0	50.0	20.0	40.0
2.36 mm	20.0	30.0	16.0	28.0
1.18 mm	---	21.0	---	---
600 μm	---	18.0	---	---
300 μm	---	15.0	---	---
75 μm	8.0	12.0	8.0	11.0

The optimum binder and aggregate gradation content shall produce 4.0% air voids. The maximum specific gravity of the uncompacted mixture shall be determined in accordance with AASHTO T 209. The percent draindown for SMA surface mixture shall not exceed 0.30% in accordance with AASHTO T 305.

The MAF equals the Gmm from the mixture design divided by the following: 2.465 for 9.5 mm mixtures and 2.500 for 12.5 mm mixtures. If the MAF calculation results in a value where 0.980 ≤ MAF ≤ 1.020, then the MAF shall be considered to be 1.000. If the calculated MAF is outside of the above range, then the actual calculated value shall be used.

The mixture shall be tested for moisture susceptibility in accordance with AASHTO T 283 except that the loose mixture curing shall be replaced by mixture conditioning for 2 h in accordance with AASHTO R 30. The minimum tensile strength ratio, TSR, shall be 70%. The 150 mm (6 in.) mixture specimens shall be compacted to 6.0 ± 1.0% air voids in accordance with AASHTO T 312. Specimens shall be prepared using freeze-thaw preconditioning. If anti-stripping additives are added to the mixture to be in accordance with the minimum TSR requirements, the dosage rate shall be submitted with the DMF.

The fine aggregate portion of the aggregate blend shall be non-plastic as determined in accordance with AASHTO T 90.

A change in the source or types of aggregates, change in source or type of stabilizing additives, or a change in the source of the specified binder shall require a new DMF. A new DMF shall be submitted to the District Materials and Tests Engineer for approval one week prior to use.

The specific gravity of SF and the Gsb of an aggregate blend containing SF may be adjusted once per contract upon notification by the SF source and approval by the District Materials and Tests Engineer. A new DMF is not required for this adjustment.

The mixture design compaction temperature for the specimens shall be 150 ± 5°C (300 ± 9°F).

VOIDS IN MINERAL AGGREGATE (VMA) CRITERIA	
Mixture Designation	*Minimum VMA, Percent*
12.5 mm	*17.0*
9.5 mm	*17.0*

410.06 Recycled Materials. *Mainline surface shall not contain recycled materials.*

410.07 Lots and Sublots*. Lots will be defined as 2400 Mg (2400 t) of SMA surface mixture. Lots will be further sub-divided into sublots not to exceed 600 Mg (600 t) of SMA surface mixture. Partial sublots of 100 Mg (100 t) or less will be added to the previous sublot. Partial sublots greater than 100 Mg (100 t) constitute a full sublot.*

410.08 Job Mix Formula*. A job mix formula, JMF, shall be developed by a certified HMA producer in accordance with ITM 583. A JMF used for SMA mixture the current or previous calendar year will be allowed. The mixture compaction temperature shall be 150 ± 5°C (300 ± 9°F). The JMF for each mixture shall be submitted to the Engineer.*

410.09 Acceptance of Mixtures. *Acceptance of mixtures for binder content, moisture, and gradation for each lot will be based on tests performed by the Engineer. The Engineer will randomly select the location(s) within each sublot for sampling in accordance with the ITM 802.*

Samples from each location shall be obtained from each sublot from the pavement in accordance with ITM 580. The second sample shall be located from the random sample by offsetting 0.3 m (1 ft) transversely towards the center of the mat and will be used for the moisture sample. The test results of the sublots will be averaged and shall meet the requirements for tolerances from the JMF for each sieve and binder content.

The maximum percent of moisture in the mixture shall not exceed 0.10 from plate samples.

The Engineer's acceptance test results for each sublot will be available after the sublot and testing are complete. During the adjustment period the test results will be made available after testing is complete.

ACCEPTANCE TOLERANCE FOR MIXTURES (%Percent Mass)										
MIXTURE	*NUMBER OF TESTS*	*SIEVE SIZE*								
					*12.5 mm	*9.5 mm	*4.75 mm	2.36 mm	600 μm	75 μm
SURFACE	*1*							*8.0*	*4.0*	*2.5*
	2							*5.7*	*2.8*	*2.1*
	3							*4.6*	*2.3*	*1.8*
	4							*4.0*	*2.0*	*1.5*

* *The acceptance tolerance for this sieve shall be the applicable composition limits specified in 410.05.*

ACCEPTANCE TOLERANCE FOR BINDER				
Binder Content	Number of Tests			
	1	2	3	4
% Binder	0.7	0.5	0.4	0.3

Acceptance of mixtures for range will be determined using the results of sublot tests performed by the Engineer from each lot. If the range is not in accordance with the requirements, adjustment points will be assessed in accordance with 410.19(a).

ACCEPTANCE TOLERANCE FOR RANGE (± Percent Mass)		
SIEVE SIZE & BINDER CONTENT	PERCENTAGE POINTS	
		SURFACE
2.36 mm		12.0
600 μm		6.0
75 μm		2.0
% BINDER		1.0

Acceptance tolerances for binder content and gradation will be as set out above for the number of tests performed. The acceptance tolerance for range will be as set out above for lots of more than one sublot. The range of binder shall be the difference between the highest sublot binder content and the lowest sublot binder content in one lot. The range of gradation shall be the difference between the highest sublot percent passing and the lowest sublot percent passing each required sieve in one lot.

Single test values and averages will be reported to the nearest 0.1% except moisture will be reported to the nearest 0.01%. Rounding will be in accordance with 109.01(a).

Lot adjustment points will be assessed in accordance with 410.19(a) when the average or range for binder content or gradation are not met.

The Contractor may request an appeal of the Engineer's test results in accordance with 410.20.

A binder draindown test in accordance with AASHTO T 305 shall be completed once per lot in accordance with 410.07 and shall not exceed 0.30%.

Stabilizing additives incorporated into the mixture will be accepted on the basis of a type A certification for the specified material properties for each shipment of fibers. Stabilizing additives from different manufacturers and different types of additives shall not be intermixed.

In the event that an acceptance sample is not available to represent a sublot(s), all test results of the previous sublot will be used for acceptance. If the previous sublot is not available, the subsequent sublot will be used for acceptance.

CONSTRUCTION REQUIREMENTS

410.10 General. *Equipment for SMA operations shall be in accordance with 409.*

Fuel oil, kerosene, or solvents shall not be transported in open containers on equipment. Cleaning of equipment and small tools shall not be accomplished on the pavement or shoulder areas.

Segregation, flushing or bleeding of SMA mixtures will not be permitted. Corrective action shall be taken to prevent continuation of these conditions. Segregated, flushed or bleeding of SMA mixtures shall be removed if directed. All areas showing an excess or deficiency of binder shall be removed and replaced.

All mixtures that become loose and broken, mixed with dirt, or is in any way defective shall be removed and replaced.

410.11 Preparation of Surfaces to be Overlaid. *Milling of an existing pavement surface shall be in accordance with 202.05. Surfaces on which a mixture is placed shall be free from objectionable or foreign materials at the time of placement.*

Milled asphalt surfaces and asphalt surfaces shall be tacked in accordance with 406. Contact surfaces of curbing, gutters, manholes, and other structures shall be tacked in accordance with 406.

410.12 Process Control. *The Engineer and Contractor will jointly review the operations to ensure compliance with the QCP. Continuous violations of compliance with the QCP will result in suspension of paving operations.*

410.13 Weather Limitations. *SMA courses shall be placed when the ambient temperature and the temperature of the surface on which it is to be placed is 7°C (45°F) or above.*

410.14 Spreading and Finishing. *The mixture shall be placed upon an approved surface by means of a paver or other mechanical devices in accordance with 409.03. Mixtures in areas inaccessible to mechanical devices may be placed by other methods.*

Prior to paving, both the planned quantity and lay rate shall be adjusted by multiplying by the MAF. When mixture is produced from more than one DMF or JMF for a given pay item, the MAF will be applied to the applicable portion of the mixture for each.

Planned SMA courses greater than 90 kg/m^2 (165 lb/syd) placed under traffic, shall be brought up even with each adjacent lane at the end of each work day. Planned SMA courses less than or equal to 90 kg/m^2 (165 lb/syd) shall be brought forward concurrently, within practical limits, limiting the work in one lane to not more than one work day of production before moving back to bring forward the adjacent lane.

Hydraulic extensions on the paver will not be permitted for continuous paving operations. Fixed extensions or extendable screeds shall be used on courses greater than

the nominal width of the paver except in areas where the paving widths vary. Hydraulic extensions may be used in tapers and added lanes less than 75 m (250 ft) in length.

Automatic slope and grade controls will be required and shall be outlined in the QCP.

SMA mainline and SMA shoulders which are 2.4 m (8.0 ft) or more in width shall be placed with automatic paving equipment.

The rollers shall be operated to avoid shoving of the SMA and at speeds not to exceed 4.5 km/h (3 mph). Rollers shall be in accordance with 409.03 (d) 1, 2, or 6. Vibratory rollers meeting the requirements of 409.03(d)1 may be used but shall not be operated in vibratory mode, except the vibratory mode may be used on the first pass to the paver.

The finished thickness of any course shall be at least two times but not more than four times the maximum particle size as shown on the DMF.

410.15 Joints. *Longitudinal joints in the surface shall be at the lane lines of the pavement.*

Transverse joints shall be constructed by exposing a near vertical full depth face of the previous course. For areas inaccessible to rollers, other mechanical devices shall be used to achieve the required density.

If constructed under traffic, temporary transverse joints shall be feathered to provide a smooth transition to the driving surface.

410.16 Density. *Acceptance will be based on lots and sublots in accordance with 410.07.*

The Engineer's acceptance test results for each sublot will be available after the sublot and testing are complete.

Sublot and lot density values will be reported to the nearest 0.1%. Rounding will be in accordance with 109.01(a).

Density acceptance for all SMA mixtures shall be based on cores cut from the compacted pavement and analysis of pavement samples obtained in accordance with ITM 580. Acceptance will be based on lots and sublots in accordance with 410.07. The Engineer will randomly select two locations in accordance with ITM 802, within each sublot for coring. The transverse core location will be located so that the edge of the core will be no closer than 75 mm (3 in.) from a confined edge or 150 mm (6 in.) from a non-confined edge of the course being placed. The maximum specific gravity will be determined from the sample obtained in 410.09.

The Contractor shall obtain cores in the presence of the Engineer with a device that shall produce a uniform 150 mm (6 in.) diameter pavement sample. Surface courses shall be cored within one work day of placement. Damaged core(s) shall be

discarded and replaced with a core from a location selected by adding 0.3 m (1.0 ft) to the longitudinal location of the damaged core using the same transverse offset.

The Contractor and the Engineer shall mark the core to define the course to be tested. If the core indicates a course thickness of less than 2.0 times the maximum particle size, the core will be discarded and a core from a new random location will be selected for testing.

The Engineer will take immediate possession of the cores. If the Engineer's cores are subsequently damaged, additional coring within a specific sublot or sublots will be the responsibility of the Department. Subsequent core locations will be determined by subtracting 0.3 m (1.0 ft) from the random location using the same transverse offset.

The density of the mixture will be expressed as the percentage of maximum specific gravity (%MSG) obtained by dividing the average bulk specific gravity by the maximum specific gravity for the sublot, times 100. The Engineer will determine the BSG of the cores in accordance with AASHTO T 166. The maximum specific gravity will be determined in accordance with AASHTO T 209 from plant produced materials prepared in accordance with ITM 572. The target value for density of SMA mixtures of each sublot shall be 93.0%.

The densities of the sublots will be averaged to determine the density of the lot.

Within one work day of coring operations the Contractor shall clean, dry, and refill the core holes with SMA of similar or smaller size particles or other approved materials. The Contractor's plan for refilling core holes shall be outlined in the QCP.

410.17 Shoulder Corrugations. *Shoulder corrugations shall be in accordance with 606.*

410.18 Pavement Smoothness. *The pavement smoothness will be evaluated and determined in accordance with 401.18.*

410.19 Adjustment Points. *When test results for mixture properties, density exceed the allowable tolerances, adjustment points will be assessed. The adjustment points will be used to calculate a quality assurance adjustment quantity (q) for the lot. Quality assurance adjustment points for smoothness will be in accordance with 401.19(c).*

The adjustment for mixture properties and density are calculated as follows.

$$q = (L \times U \times P/100)/MAF$$

where:

q = quality assurance adjustment quantity
L = lot quantity
U = unit price for the material, $/Mg ($/TON)
P = total adjustment points

The total quality assurance adjustments is to be calculated as follows:

$$Q = Q_s + \sum (q_m + q_d)$$

where:

Q = total quality assurance adjustment quantity
Q_s = quality assurance adjustment for smoothness as calculated in 401.19(c)
q_m = lot adjustments for mixtures
q_d = lot adjustments for density

If the total adjustment points for a lot are greater than 15, the pavement will be evaluated by the Materials and Tests Division. If the Contractor is not required to remove the mixture, quality assurance adjustments of the lot will be assessed or other corrective actions as determined by the Materials and Tests Division.

(a) Mixture. *When test results for the mixture furnished exceed the allowable tolerances, adjustment points will be assessed as follows:*

ADJUSTMENT POINTS FOR GRADATION									
Adjustment Points	*SIEVE SIZE*								
				12.5 mm	*9.5 mm*	*4.75 mm*	*2.36 mm*	*600 Fm*	*75 Fm*
For Each 0.1% up to 1.0% Out Of Tolerance				*0.1*	*0.1*	*0.1*	*0.1*	*0.2*	*0.3*
For Each 0.1% > 1.0% Out of Tolerance				*0.1*	*0.1*	*0.1*	*0.2*	*0.3*	*0.6*

Gradation adjustment points for the lot shall be the sum of points calculated for up to 1% out of tolerance and the points calculated for greater than 1% out of tolerance in accordance with 410.09.

Binder content adjustment points for the lot shall be two points for each 0.1% above the tolerance or four points for each 0.1% below the tolerance in accordance with 410.09.

When test results for the mixture furnished exceed the allowable range in accordance with 410.09, adjustment points will be assessed as follows:

ADJUSTMENT POINTS FOR RANGE	
Sieve Size and Binder Content	*Adjustment Points (For Each 0.1% Out Of Range)*
2.36 mm	*0.1*
600 μm	*0.1*
75 μm	*0.1*
% Binder	*1.0*

For mixtures produced during a certified HMA plant's adjustment period, adjustment points will not be assessed if the mixture produced is in accordance with the following.

1. *The gradation complies with 410.05 with the allowable tolerance limits shown in 410.09.*

2. *The range for the binder content and gradation do not exceed the limits shown in 410.09.*

3. *The binder content is within the tolerance requirements of 410.09.*

If the mixture is not in accordance with these requirements, adjustment points will be assessed in accordance with 410.09 for variations exceeding the requirements shown above.

(b) Density. *When the density of the lot is outside the allowable tolerances, adjustment points will be assessed as follows:*

DENSITY	
Percentages are based on %MSG	*Pay Adjustments– Percent*
> 97.0	*Submitted to the Materials and Tests Division **
93.0 – 97.0	*0.00*
92.0 – 92.9	*0.20 points for each 0.10 % below 93.0*
91.0 – 91.9	*2.00 + 0.40 points for each 0.10 % below 92.0*
89.0 – 90.9	*6.00 + 1.00 points for each 0.10 % below 91.0*
≤89.0	*Submitted to the Materials and Tests Division **

** Test results will be considered and adjudicated as a failed material in accordance with normal Department practice as listed in 105.03.*

410.20 Appeals*. If the QC test results do not agree with the acceptance test results, a request, along with the QC test results, may be made in writing for additional testing. The basis of the appeal shall include applicable QC test results showing acceptable quality results and shall be submitted within seven calendar days of receipt of the Department's written results for that sublot. Acceptable QC test results are defined as QC test results resulting in less pay adjustment to the contract than that determined by the Department. If an appeal is granted, appeal cores shall be taken within seven calendar days after written notification unless otherwise directed. Within one work day of appeal coring operations the Contractor shall clean, dry, and refill the core holes with SMA or HMA surface materials.*

The results of the appeal cores will replace the initial test results for a sublot(s) or lot and be used as the basis for acceptance.

(a) Mixture*. Upon approval for the additional testing, the Contractor shall take cores in accordance with ITM 580. The core location will be within 0.3 m (1.0 ft) longitudinally of the sample tested using the same transverse offset.*

(b) Density. *Additional core locations will be determined by adding 0.3 m (1.0 ft) longitudinally of the cores tested using the same transverse offset. Each sublot density will be calculated using the average bulk specific gravity of the cores obtained for that sublot and the average MSG of the lot.*

410

410.21 Method of Measurement. *SMA mixtures will be measured by the megagram (ton) of the type specified, in accordance with 109.01(b). The measured quantity will be divided by the MAF to determine the pay quantity.*

410.22 Basis of Payment. *The accepted quantities for this work will be paid for at the contract unit price per megagram (ton) for QC/QA-HMA, of the type specified, – SMA, complete in place.*

Payment for furnishing, calibrating, and operating the profilograph, and
420 furnishing profile information will be made at the contract lump sum price for profilograph, HMA.

Adjustments to the contract payment with respect to mixture, density, and smoothness for mixture produced will be included in a quality assurance adjustment pay item. The unit price for this pay item will be one dollar ($1.00) and the quantity will be in units of dollars. The quantity is the total calculated in accordance with 410.19. An extra work order developed in accordance with 109.05 will be prepared to reflect contract adjustments.

430 Payment will be made under:

Pay Item	*Metric Pay Unit Symbol (English Pay Unit Symbol)*
Profilograph, HMA	*LS*
QC/QA HMA, _____, ____, _____, ____ mm – SMA (*ESAL[1]*) (*PG[2]*) (*Course[3]*) (*Mix[4]*)	*Mg (TON)*
Quality Assurance Adjustment	*DOL*

(1) ESAL Category as defined in 410.04
440 (2) Number represents the high temperature binder grade. Low temperature grades are –22.
(3) Surface,
(4) Mixture Designation

Preparation of surfaces to be overlaid shall be included in the cost of other pay items.

Coring and refilling of the pavement holes shall be included in the cost of other pay items within this section.

450 No payments will be made for additional anti-stripping additives, appeal coring or related traffic control expenditures for coring operations.

Corrections for pavement smoothness shall be included in the cost of other pay items within this section.

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 410, CONTINUED.

The price for profilograph, HMA will be full compensation regardless of how often the profilograph is used or how many profilograms are produced.

Other sections containing specific cross references:

None

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision
Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Recurring Special Provisions potentially affected:

400-R-435

Standard Sheets potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

Item No. 49-26
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 501, BEGIN LINE 70, DELETE AND INSERT AS FOLLOWS:

The Contractor may elect to use fine and coarse aggregates in accordance with 904, or may propose the use of alternate gradations. If alternate gradations are proposed, the QCP shall specify the tolerances of material passing each sieve. In either case, 100% of the coarse aggregate shall pass the 25 mm (1 in.) sieve. The combined amount of fine and coarse aggregates passing the 75 μm (No. 200) sieve shall be from 0% to 2.0% for ~~sand~~ fine aggregate and gravel, and from 0% to 2.5% for ~~sand~~ fine aggregate and crushed stone or crushed slag.

Other sections containing specific cross references:

501.04 Pg 501 SS
501.08 Pg 503 SS
501.17 Pg 506 SS
502.03 Pg 516 SS

Recurring Special Provisions potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision
Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Standard Sheets potentially affected:

None

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

Item No. 49-27
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 501, BEGIN LINE 143, INSERT AS FOLLOWS:

501.11 Preparation of Subbase. *Subbase, if required, shall be placed and shaped to the required grade and section in accordance with 302. Construction traffic shall not be allowed on the aggregate drainage layer of the subbase, except where concrete placement is restricted. Exceptions shall be submitted for approval.*

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

Item No. 49-28
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 501, BEGIN LINE 223, INSERT AS FOLLOWS:

501.17 CMD Adjustments. *The target water/cementitious ratio and target unit weight may be adjusted during the first lot of each year's production or as a result of fluctuations in fine or coarse aggregate specific gravities.*

Other sections containing specific cross references:

605.06 Pg 364
616.09 Pg 385

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision
Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Recurring Special Provisions potentially affected:

None

Standard Sheets potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 501, BEGIN LINE 278, DELETE AND INSERT AS FOLLOWS:

The profilograph shall be used on all full-width pavement lanes of ~~75 m (250 ft)~~ 0.16 km (0.1 mi.) or longer and having a design speed greater than 70 km/h (45 mph)~~, unless otherwise specified~~.

If a pay item, profilograph, PCCP, is included in the contract, and the above conditions are met, the Contractor shall furnish, calibrate, and operate an approved profilograph in accordance with ITM 901. The profilogram produced shall become the property of the Department. The profilograph shall remain the property of the Contractor. When a ~~profilograph~~, PCCP is not included as a pay item, and the above conditions are met, the Department will furnish, calibrate, and operate the profilograph.

The 4.9 m (16 ft) long straightedge shall be used on all full-width pavement lanes shorter than ~~75 m (250 ft)~~ 0.16 km (0.1 mi.), on tapers, within 15 m (50 ft) of ~~bridge ends~~ a reinforced concrete bridge approach, and within 15 m (50 ft) of an existing pavement which is being joined~~, on ramps, and on full-width pavement lanes having a design speed of 70 km/h (45 mph) or less, unless otherwise specified~~.

The 3 m (10 ft) long straightedge shall be used for transverse slopes, approaches, and crossovers.

As soon as the PCCP has cured sufficiently, the smoothness may be checked. Profile testing shall be completed prior to opening the pavement to traffic. The Department may direct that the pavement profile be ~~tested~~ evaluated within 24 h following placement. When profile testing is consistently outside pavement surface tolerances the paving operation shall be discontinued until an amended QCP is submitted. An initial profile index will be determined from the profilogram of this profile. The initial profile index for areas requiring replacement will be adjusted to include the results of a profilogram of all replaced areas.

Pavement smoothness variations outside specified tolerances shall be corrected by grinding with a groove type cutter or by replacement. Grinding will not be permitted until the PCCP is 10 days old or ~~until~~ the ~~test~~ flexural strength tests ~~modulus of rupture of~~ is 3800 kPa (550 psi) or greater. The grinding of the pavement to correct the profile shall be accomplished in either the longitudinal or the transverse direction. The PCCP texture after grinding shall be uniform. If the grinding operation reduces the tining grooves to a depth of less than 1.5 mm (1/16 in.) and the longitudinal length of the removal area exceeds 4.5 m (15 ft), or two or more areas are within 9.0 m (30 ft) of each other, the PCCP shall be retextured in the transverse direction in accordance with 504.03.

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 501, CONTINUED.

Other sections containing specific cross references:

502.20 Pg 522 SS
507.06 Pg 542 SS
605.09 Pg 366

Recurring Special Provisions potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision
Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Standard Sheets potentially affected:

None

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

Item No. 49-30
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 502, BEGIN LINE 140, INSERT AS FOLLOWS:

502.08 Preparation of Subbase. *Subbase, if required, shall be placed and shaped to the required grade and section in accordance with 302. Construction traffic shall not be allowed on the aggregate drainage layer of the subbase, except where concrete placement is restricted. Exceptions shall be submitted for approval.*

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

Item No. 49-31
Mr. Caplinger
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 503, BEGIN LINE 34, INSERT AS FOLLOWS:

All joints shall be cut to the required dimensions and sealed. All sawed joints shall be made by ~~concrete saws~~ sawing equipment in accordance with 508.07 and shall be in accordance with the following.

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: 609-RCBA-01, 02 609-BRJT-01
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 507, BEGIN LINE 19, DELETE AND INSERT AS FOLLOWS:

~~***507.03 Routing Cracks and Joints.*** *Cracks and joints in PCCP shall be routed when specified. Cracks and joints shall then be cleaned by blowing with compressed air or by other suitable means. Air compressors shall be capable of producing a minimum air pressure of 690 kPa (100 psi). Water blasting shall not be applied under pressure that may damage the concrete.*~~

507.03 Cracks. *Sealing and filling operations shall not be conducted on a wet surface, when the ambient temperature is below 4°C (40°F), or when other unsuitable conditions exist, unless approved by the Engineer.*

(a) Routing, Cleaning and Sealing. *Cracks in PCCP shall be routed and cleaned when specified. Cracks shall be routed with a vertical-spindle router with carbide-tipped or diamond router bits to form a reservoir not exceeding 13 mm (0.5 in.) wide with a minimum depth of 19 mm (0.75 in.). The operation shall be coordinated such that routed materials do not encroach on pavement lanes carrying traffic and all routed materials are disposed of in accordance with 104.07. The cracks shall be cleaned with compressed air or by other suitable means. Air compressors shall be capable of producing a minimum air pressure of 690 kPa (100 psi). Water blasting shall not be utilized.*

Cracks shall be sealed with asphalt rubber in accordance with the manufacturer recommendations within 7 mm (0.25 in.) of the surface. A distributor in accordance with 409.03 shall be used with an indirect-heat double boiler kettle and mechanical agitator. The asphalt rubber shall be placed utilizing a "V" shaped wand tip, to allow the penetration of the materials into the cracks.

Application of asphalt rubber shall be completed without covering existing pavement markings. When traffic is to be maintained within the limits of the section, temporary traffic control measures in accordance with 801 shall be used. Treated areas shall not be opened to traffic until the asphalt rubber has been absorbed.

(b) Cleaning and Filling. *The cracks shall be cleaned by blowing with compressed air or by other suitable means when specified. Air compressors shall be capable of producing a minimum air pressure of 690 kPa (100 psi). Water blasting shall not utilized.*

Cracks shall be sealed with asphalt emulsion. The cracks shall be completely filled or overbanded not to exceed 125 mm (5 in.), or as required. Asphalt emulsion shall be placed utilizing a "V" shaped wand tip, to allow the penetration of the materials into the cracks. The filled cracks shall be covered with sufficient fine aggregate to prevent tracking of the asphalt emulsion. All excess cover material shall be removed from the pavement.

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 507, CONTINUED.

Application of asphalt emulsion shall be completed without covering existing pavement markings. When traffic is to be maintained within the limits of the section, temporary traffic control measures in accordance with 801 shall be used. Treated areas shall not be opened to traffic until the asphalt emulsion has been absorbed.

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 507, BEGIN LINE 25, DELETE AND INSERT AS FOLLOWS:

~~***507.04 Sealing Cracks and Joints.*** *Longitudinal and transverse joints that have been routed shall be cleaned and sealed as required in accordance with 503.05. Longitudinal and transverse joints that have not been routed shall be cleaned and sealed with asphalt material. Cracks and joints shall be cleaned by blowing with compressed air or by other suitable means. The asphalt material shall be placed to allow the penetration of the materials into the cracks and joints. The cracks and joints shall be completely filled. All excess asphalt material shall be removed from the pavement. The sealed cracks and joints shall be covered with sufficient fine aggregate to prevent tracking of the asphalt materials. All excess cover material shall be removed from the pavement.*~~

507.04 Joints. *Sealing and filling operations shall not be conducted on a wet surface, when the ambient temperature is below 4°C (40°F), or when other unsuitable conditions exist, unless approved by the Engineer.*

(a) Sawing, Cleaning and Sealing. *Joints in PCCP shall be sawed, cleaned and sealed when specified. Air compressors shall be capable of producing a minimum air pressure of 690 kPa (100 psi). Water blasting shall not be utilized. The existing joints shall be sawed to the width and depth as shown on the plans. Slurry or saw residue remaining in the slot shall be immediately flushed. Traffic may be allowed on the PCCP for up to 7 calendar days after the saw cutting prior to sealing.*

Joints shall be sealed with joint sealing materials in accordance with the sealant manufacturer's recommendations. Transverse joints shall be sealed with silicone sealant or preformed electrometric joint sealant. Longitudinal joints shall be sealed with an asphalt rubber or silicone sealants.

Application of asphalt materials shall be completed without covering existing pavement markings. When traffic is to be maintained within the limits of the section, temporary traffic control measures in accordance with 801 shall be used. Treated areas shall not be opened to traffic until the asphalt material has been absorbed.

(b) Cleaning and Filling*. Joints in PCCP shall be cleaned by blowing with compressed air or by other suitable means when specified. Air compressors shall be capable of producing a minimum air pressure of 690 kPa (100 psi). Water blasting shall not be utilized.*

Joints shall be sealed with asphalt rubber in accordance with the manufacturer recommendations within 7 mm (0.25 in.) of the surface. A distributor in accordance with 409.03 shall be used with an indirect-heat double boiler kettle and mechanical agitator. The asphalt rubber shall be placed utilizing a "V" shaped wand tip, to allow the penetration of the materials into the joints.

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 507, CONTINUED.

Other sections containing specific cross references:

507.06 Pg 542 SS

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision
Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Recurring Special Provisions potentially affected:

None

Standard Sheets potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

Item No. 49-34
Mr. Kuchler
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 507, BEGIN LINE 57, DELETE AND INSERT AS FOLLOWS:

507.06 Profiling. *Profiling consists of the diamond grinding of the pavement. The grinding shall be completed by mechanical grinding equipment using diamond tipped saw blades mounted on a power driven, self-propelled machine containing transverse and longitudinal grade controls. The cutting head shall be no less than 900 mm (36 in.) wide to produce a uniform texture per the full width of the cutting head shaft. Grinding shall be completed in a longitudinal direction and shall begin and end at lines normal to the pavement centerline in any ground section. The operation shall be coordinated such that the slurry or residue materials are continuously removed from the pavement. The slurry shall ~~not encroach into adjacent pavement lanes carrying traffic, or flow into gutters or other drainage facilities~~ be immediately and directly deposited into a tanker truck and removed from the jobsite. Final disposal of the material shall be in an approved manner and in accordance with 107.01. ~~Retexturing of the pavement tining in accordance with 504.03 is required.~~ Pavement smoothness will be measured and adjusted in accordance with 501.25 and 501.28(d) after the cracks and joints are cleaned and resealed in accordance with 507.03 and 507.04.*

Other sections containing specific cross references:

506.10 Pg 539 SS

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision
Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Recurring Special Provisions potentially affected:

None

Standard Sheets potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

-----Original Message-----
From: NOVAK, JOE
Sent: Wednesday, June 02, 2004 9:07 AM
To: SMITH, DAN
Cc: KUCHLER, DENNIS; HEALY, JOHN
Subject: Proposed Recurring Special Provision

Dan,
The attached file is proposed language for a recurring special provision for use on contracts with the pay item, PCCP Profiling, originating from section 507 of the spec book. It has been past practice to pump the slurry from concrete pavement grinding to the roadside. This creates a mess and recently has led to a suspension of work by IDEM on a Ft Wayne District project. There is indication that this will be the trend for the future. The contractor has now incurred significant additional costs. It is not the intent to emulate IDEM or other agency laws in this spec. However, the attached language is intended to act as a band aid until it can be further reviewed. Hopefully, this will permit contractors to bid accordingly. Any comment would be appreciated before its use. Thank you.

Joseph J. Novak, P.E.
Construction Field Engineer
INDOT - Central Office
Division of Contracts & Construction
Rm N925, 100 N. Senate Ave
Indianapolis, IN 46204
Phone: 317-232-5081

Item No. 49-35
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 507, BEGIN LINE 103, DELETE AND INSERT AS FOLLOWS:

507.09 Method of Measurement. *Routing and sealing of cracks ~~and joints~~, filling of cracks, ~~and sealing cracks and~~ routing and sealing of joints, and filling of joints will be measured by the meter (linear foot), complete in place. Retrofit load transfer will be measured by each dowel bar assembly installed, complete in place. PCCP patching will be measured in accordance with 506.12. Profiling, regardless of depth, will be measured by the square meter (square yard). Asphalt material and drilled holes for undersealing will be measured in accordance with 612.06.*

HMA partial depth patching will be measured by the megagram (ton), in accordance with 109.01(b).

Construction activities for the cutting, cleaning of the PCCP, dowel bars, dowel bar supports, dowel bar end caps, foam core board, patching material and all other incidentals will not be measured.

Routing of cracks or joints will not be measured. Routing and sealing of transverse random cracks at retrofitted load transfer assemblies will not be measured.

Temporary traffic control measures for routing, sealing or filling of cracks or joints, and profiling will be measured in accordance with 801.17.

Other sections containing specific cross references: 305.06 Pg 311 SS	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 507, BEGIN LINE 123, DELETE AND INSERT AS FOLLOWS:

507.10 Basis of Payment. *Routing and sealing of cracks ~~and joints~~, filling of cracks, ~~and sealing cracks and~~ routing and sealing of joints, and filling of joints will be paid for by the meter (linear foot), complete in place. The accepted quantities of retrofit load transfer will be paid for at the contract unit price per each assembly installed, complete in place. PCCP patching will paid for in accordance with 506.13. Profiling will be paid for by the square meter (square yard). Undersealing and drilled holes will be paid for in accordance with 612.07. The accepted quantities for HMA partial depth patching will be paid for at the contract unit price per megagram (ton), complete in place.*

The cost of temporary traffic control measures for routing, sealing or filling of cracks or joints, and profiling will be paid for in accordance with 801.18.

Payment will be made under:

Pay Item	*Metric Pay Unit Symbol (English Pay Unit Symbol)*
Cracks ~~and Joints~~ in PCCP, Rout and Seal	*m (LFT)*
Cracks ~~and Joints~~ in PCCP, ~~Seal~~ Filled	*m (LFT)*
Joints in PCCP, Rout and Seal	*m (LFT)*
Joints in PCCP, Filled	*m (LFT)*
HMA Partial Depth Patch	*Mg (TON)*
Profiling PCCP	*m2 (SYD)*
Retrofit Load Transfer	*EACH*

The cost of milling, cleaning, tacking, and all incidentals shall be included in the cost of the pay item, partial depth patching.

The cost of cutting of slots, cleaning, dowel bars, dowel bar supports, dowel bar end caps, foam board, mortar, and curing materials shall be included in the cost of the pay item retrofit load transfer.

The cost of cleaning, sealing materials, and all incidentals shall be included in the cost of the pay item ~~sealing~~ filling cracks ~~and~~ or joints.

The cost of routing, cleaning, sealant materials, and all incidentals shall be included in the cost of the pay item routing and sealing cracks ~~and~~ or joints.

The cost of all grinding, diamond cutting heads, and cleaning of the pavement, ~~and re-tining of the surface~~ shall be included in the cost of the pay item for profiling.

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 507, CONTINUED.

Other sections containing specific cross references:

305.07 Pg 311 SS

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision
Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Recurring Special Provisions potentially affected:

None

Standard Sheets potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 605, BEGIN LINE 58, DELETE AND INSERT AS FOLLOWS:

(c) Proportioning and Placing. Concrete shall be proportioned, mixed, and placed in accordance with ~~the requirements for the class of concrete specified~~ *502*. Where integral curb and gutter is specified, that portion of the curb below the upper surface elevation of the adjoining pavement shall be constructed by extending the pavement to the outer vertical plane of the curb at the time the pavement is placed. The concrete used in this extension shall be the same composition as that of the pavement.

As an option, an integral curb and gutter may be placed at the same time as the PCCP pavement by the slip form method. The slip form machine must have an attachment to place, consolidate and shape the concrete to the required shape and dimensions. The reinforcement tie bars or stirrups between the pavement and the curb shall be omitted.

~~The upper portion of the curb shall be of class A concrete in accordance with in 702.~~ After the concrete for the upper portion is placed in the forms, it shall be tamped and spaded or vibrated until mortar entirely covers the surface. The top shall be floated smooth and the outer upper corner rounded to a 6 mm (0.25 in.) radius.

The face and top of the curb, integral curb, *and* gutter~~, and sidewalk~~ shall be checked with a 3 m (10 ft) straight edge. Portions showing irregularities of 6 mm (0.25 in.) or more shall be removed and replaced.

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

Item No. 49-38
Mr. Caplinger
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 609, BEGIN LINE 27, DELETE AND INSERT AS FOLLOWS:

609.05 Joints. *Longitudinal construction joints will only be permitted as shown on the plans. The type I-A joint ~~will~~ shall be constructed as shown on the plans.*

Type I-A joints shall be created by sawing slots using sawing equipment in accordance with 508.07. The joint shall be cut in two operations. The initial saw cut shall commence as soon as the concrete has hardened sufficiently to permit sawing without raveling, usually 2 to 12 h after placement.

The second saw cut shall be made after the concrete has sufficiently cured, but before opening the RCBA to all traffic. Slurry or saw residue remaining in the slot shall be immediately flushed. Construction traffic shall not be allowed on the RCBA after the second saw cut until the joint is sealed.

The sawed slot shall becleaned to remove all foreign matter from the entire depth of cut. Joint sealing shall be in accordance with 503.05.

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: 609-RCBA-01, 02 609-BRJT-01
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

Item No. 49-39
Mr. Caplinger
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 609, BEGIN LINE 105, INSERT AS FOLLOWS:

Subgrade preparation will not be measured for payment. Finishing and curing of the RCBA will not be measured for payment. Construction joints or type I-A joints will not be measured for payment.

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

Item No. 49-40
Mr. Caplinger
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 609, BEGIN LINE 129, INSERT AS FOLLOWS:

The cost of all labor and materials for the placement of construction joints and type I-A joints shall be included in the cost of the RCBA.

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

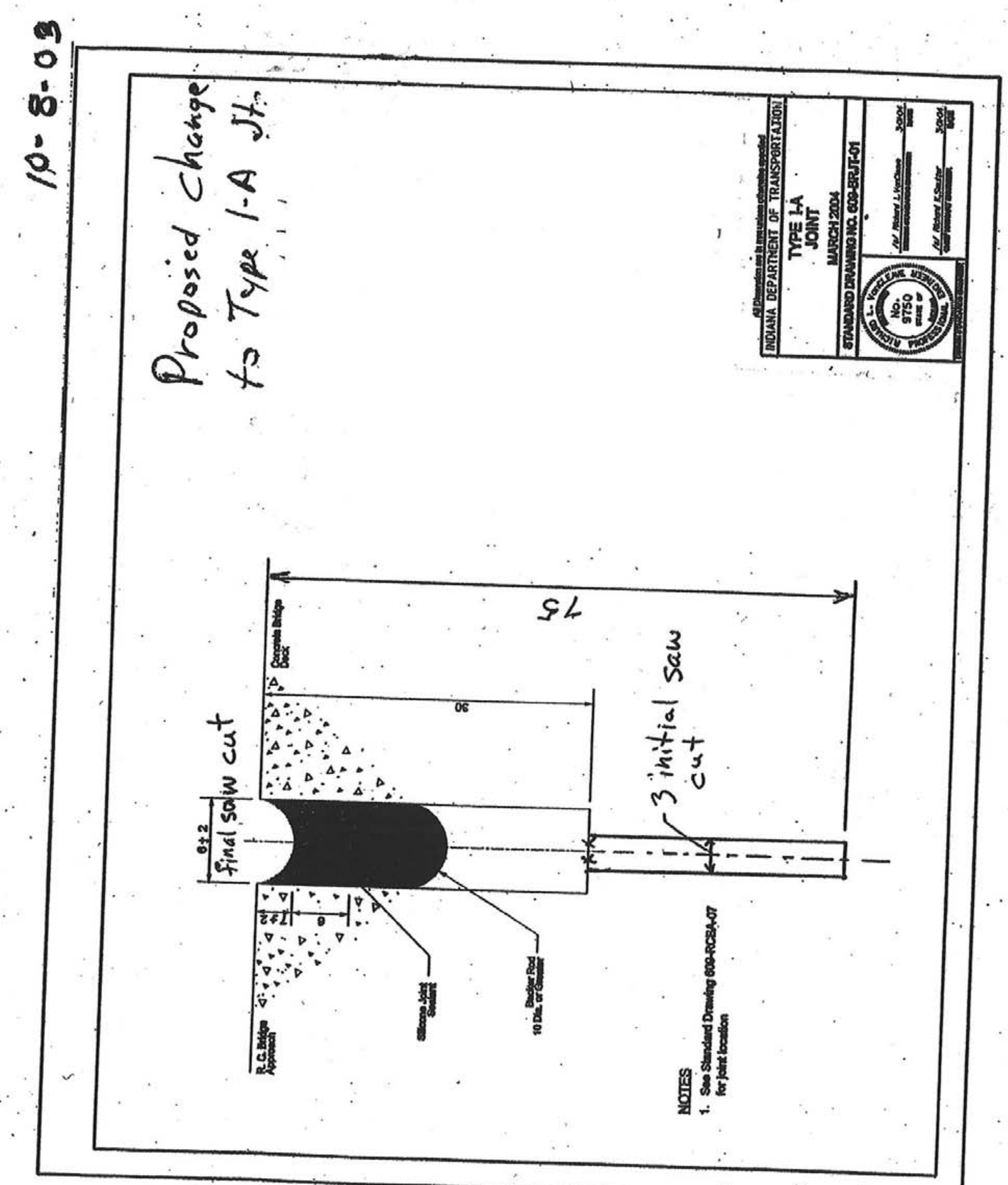
Item No. 49-41
Mr. Caplinger
Date: 6/17/04

REVISION TO STANDARD DRAWINGS

609-BRJT-01, Type I-A Joint

Revises the method of constructing the type I-A joint.

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: See Above
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____


10-8-03
Proposed Change to Type 1-A Jt.
INDIANA DEPARTMENT OF TRANSPORTATION
TYPE 1-A JOINT
MARCH 2004
STANDARD DRAWING NO. 609-BRJT-01
R.C. Bridge Approach
Concrete Bridge Deck
Silicone Joint Sealant
Backer Rod 10 Dia. or Greater
final saw cut
3 initial saw cut
6±2
90
75
NOTES
1. See Standard Drawing 609-RCBA-07 for joint location

Item No. 49-42
Mr. Caplinger
Date: 6/17/04

REVISION TO STANDARD DRAWINGS

609-RCBA-01, Reinforced Concrete Bridge Approach for use with Asphalt Pavement.
609-RCBA-02, Reinforced Concrete Bridge Approach for use with PCCP.

These revisions clarify the use of the type I-A joint.

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: See Above
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

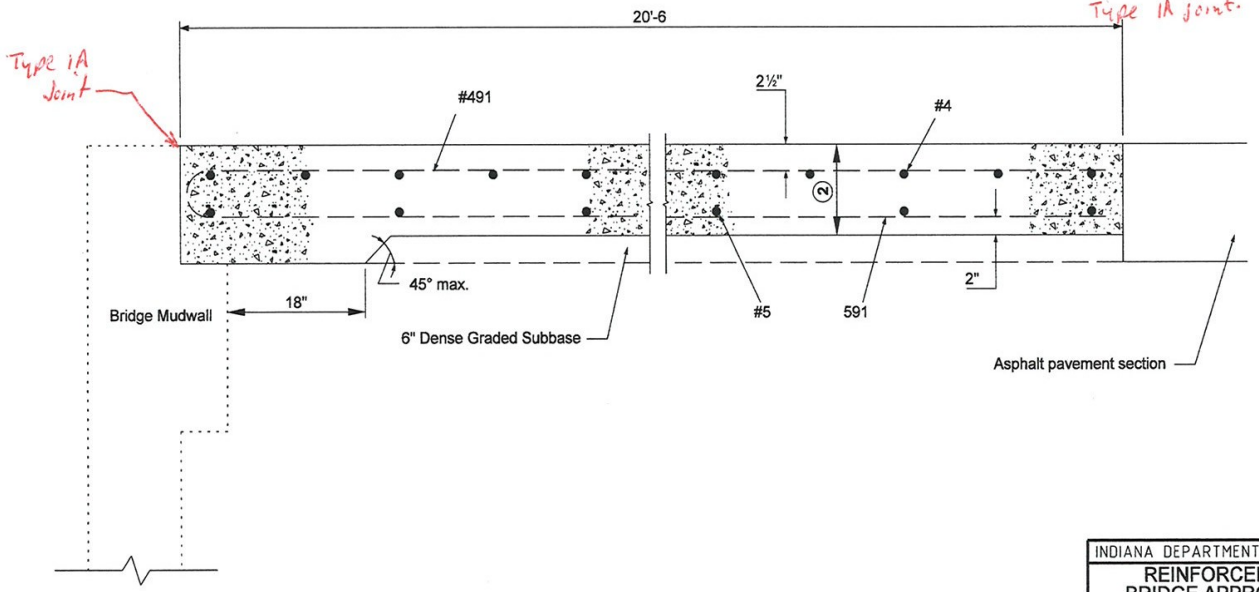
NOTES

1. For reinforcement details, see Standard Drawing E 609-RCBA-03 for square RCBAs and Standard Drawing E 609-RCBA-04 for skewed RCBAs.

(2) 10" if design year AADT < 1000
12" if design year AADT ≥ 1000

3. All reinforcing bars shall be epoxy coated.

4. See Standard Drawings 609-RCBA-07 & 609-BRJT-01 for details of Type 1A joint.



OK JEF 5/10/04

INDIANA DEPARTMENT OF TRANSPORTATION

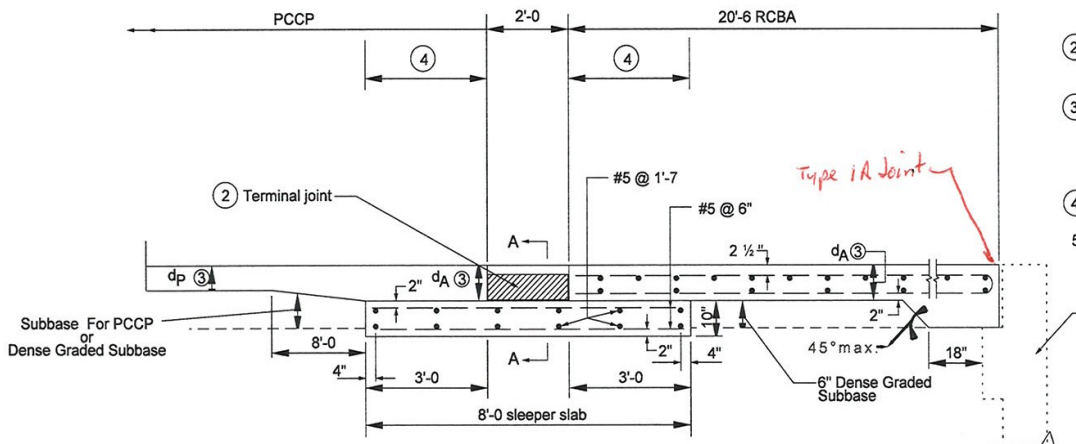
REINFORCED CONCRETE BRIDGE APPROACH FOR USE WITH ASPHALT PVMT.
MARCH 2004

STANDARD DRAWING NO. E 609-RCBA-01

RICHARD L. VANCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER
DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 3-01-04
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K. Smutzer 3-01-04
CHIEF HIGHWAY ENGINEER DATE

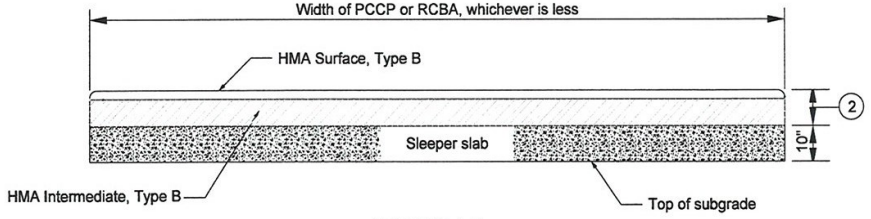


GENERAL NOTES

1. For reinforcement details, see Standard Drawing 609-RCBA-03 for square RCBAs and Standard Drawing 609-RCBA-04 for skewed RCBAs.
2. Terminal joint elevation shall match elevation of adjacent PCCP and RCBA.
3. Depth d_A must equal d_P. However, if d_P s less than 12 in., d_A must be 12 in.
4. Limits of polyethylene bond breaker.
5. All reinforcing bars in the reinforced concrete bridge approach shall be epoxy coated.
6. See Standard Drawings 609-RCBA-03 & 609-BRJT-01 for details of Type 1A joint.

TERMINAL JOINT FOR PCCP AT BRIDGE STRUCTURE

OK JEJ 5/10/04



SECTION A-A

INDIANA DEPARTMENT OF TRANSPORTATION

REINFORCED CONCRETE BRIDGE APPROACH AND TERMINAL JOINT FOR USE WITH PCCP
MARCH 2004

STANDARD DRAWING NO. E 609-RCBA-02

RICHARD L. VANCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER
DESIGN STANDARDS ENGINEER

/s/ Richard L VanCleave 3-01-04
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K. Smutzer 3-01-04
CHIEF HIGHWAY ENGINEER DATE

Item No. 49-43
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 610, BEGIN LINE 22, DELETE AND INSERT AS FOLLOWS:

610.03 General Requirements. ~~Except as otherwise herein provided, subgrade~~ *Subgrade* for approaches shall be prepared in accordance with 207.~~04~~. *Aggregate base shall be constructed in accordance with 301. HMA for approaches shall be constructed in accordance with 402. HMA mixture for approaches shall be HMA surface or intermediate, type A, B, ~~or~~ C, or D in accordance with 402.04. A MAF in accordance with 402.04 will not apply.*

Dense graded subbase shall be constructed in accordance with 302. PCCP for approaches shall be constructed in accordance with 502.

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

Item No. 49-44
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 718, BEGIN LINE 155, DELETE AND INSERT AS FOLLOWS:

The mixture for HMA for underdrains shall be Intermediate ~~C19.0~~ OG 19.0 mm in accordance with 401. An ESAL Category 5 in accordance with 401.04 and a PG Binder 76-22 shall be used. A MAF in accordance with 401.05 will not apply. Acceptance of the HMA for underdrains will be in accordance with 402.09.

Other sections containing specific cross references: 719.02 Pg 544	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

Item No. 49-45
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 718, BEGIN LINE 162, INSERT AS FOLLOWS:

718.03 Pipe Installation. *Trenches shall be excavated to the dimensions and grade shown on the plans. Pipes shall be secured to ensure that the required grade and horizontal alignment of the pipe are maintained. Perforated pipe shall be placed with the perforations down. The pipe sections shall be joined securely with the appropriate couplings, fittings, or bands. Aggregate for underdrains shall be placed in a manner which minimizes aggregate contamination. HMA for underdrains shall be placed and compacted separately from mainline mixtures. HMA for underdrains may be placed in one lift and shall be compacted with equipment in accordance with 409.03(d).*

Other sections containing specific cross references:

None

Recurring Special Provisions potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision
Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Standard Sheets potentially affected:

None

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

Item No. 49-46
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 718, BEGIN LINE 172, INSERT AS FOLLOWS:

718.04 Geotextile. Storage and handling of geotextiles shall be in accordance with the manufacturer's recommendations. Each geotextile roll shall be labeled or tagged. Damaged or defective geotextile shall be replaced as directed. The geotextile shall be placed loosely, but with no wrinkles or folds. The ends of subsequent rolls of geotextile shall be overlapped a minimum of 0.3 m (1.0 ft). The upstream geotextile shall overlap the downstream geotextile. Placement of aggregate shall proceed following placement of the geotextile. HMA for underdrains shall be placed and compacted separately from mainline mixtures. HMA for underdrains may be placed in one lift and shall be compacted with equipment in accordance with 409.03(d).

Other sections containing specific cross references:

None

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision
Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Recurring Special Provisions potentially affected:

None

Standard Sheets potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 904, BEGIN LINE 453, DELETE AND INSERT AS FOLLOWS:

Aggregates, except those used for precast concrete units or fine aggregates used for snow and ice abrasive, shall be supplied by a Certified Aggregate Producer in accordance with 917. Structure backfill may be obtained from a non-CAPP source in accordance with 211.02. SF for SMA mixtures shall also require the following.

(a) Specific gravity quality control tests shall be completed at a frequency of one test per 2000 Mg (ton) produced.

(b) Target bulk specific gravity shall be established using the average of the first four tests.

(c) Subsequent individual tests shall be within 0.050 of the target bulk specific gravity.

(d) Moving average of four consecutive tests shall be within 0.040 of the target bulk specific gravity.

(e) Tests outside these ranges shall require the material to be isolated from the approved stockpile until action has been taken to eliminate the cause of the nonconformity. Any nonconforming test shall be followed immediately by a corrective action. Corrective actions shall include, but are not limited to, investigation for assignable cause, correction of known assignable cause, and retesting.

(f) If it is determined that a new target is necessary, a request shall be made in writing to the District Materials and Tests Engineer to establish the new target.

Dolomite aggregates are defined as carbonate rock containing at least 10.3% elemental magnesium when tested in accordance with ITM 205.

Polish resistant aggregates are defined as those aggregates in accordance with ITM 214. Aggregates meeting these requirements will be maintained on the Department's list of approved Polish Resistant Aggregates.

Sandstone aggregates shall only be used in HMA surface or SMA surface mixtures. Sandstone aggregates are defined as a sedimentary rock composed of siliceous sandgrains containing quartz, chert, and quartzose rock fragments in a carbonate matrix or cemented with silica, calcite, or dolomite. The Materials and Tests Division will determine identification of sandstone.

Steel furnace (SF) slag shall only be used in aggregate shoulders, HMA surface or SMA surface mixtures, dumped riprap, and snow and ice abrasives.

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 904, CONTINUED.

Other sections containing specific cross references:

213.02 Pg 226
404.03 Pg 430 SS
404.10 Pg 433 SS
615.02 Pg 381
616.12 Pg 631 SS
702.03 Pg 437
707.02 Pg 476
710.02 Pg 489
722.02 Pg 552
904.02(f) Pg 921 SS

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision

Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Recurring Special Provisions potentially affected:

None

Standard Sheets potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

Item No. 49-48
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 904, BEGIN LINE 493a, INSERT AS FOLLOWS:

Characteristic	*PCC*	*HMA*	*SMA*
Physical			
Organic Impurities, AASHTO T 21, lighter than or equal to, Color Standard (Note 1)	*3*		
Acid Insoluble, ITM 202 (Note 2)		*40*	
Soundness			
Freeze and Thaw, AASHTO T 103, Method A, % Max. (Note 3)	*10%*	*10%*	*10%*
Brine Freeze-and-Thaw, ITM 209, % Max. (Note 3)	*12%*	*12%*	*12%*
Sodium Sulfate Soundness, AASHTO T 104, % Max. (Note 3)	*10%*	*10%*	*10%*

NOTES:

1. *When subjected to the colorimetric test for organic impurities and a color darker than the standard is produced, it shall be tested for effect of organic impurities on strength of mortar in accordance with AASHTO T 71. If the relative strength at seven days is less than 95% it shall be rejected.*

2. *For ACBF or GBF slag sands, the minimum acid insoluble content shall be 25%. Acid insoluble requirements shall not apply to crushed limestone or dolomite sands.*

3. *AASHTO T 104 and ITM 209 may be run at the option of the Engineer, in-lieu of AASHTO T 103.*

Other sections containing specific cross references:

205.02 Pg 200
213.02 Pg 226
605.02 Pg 362
608.02 Pg 369
615.02 Pg 381
702.03 Pg 437
707.02 Pg 476
715.02(j) Pg 524
722.02 Pg 552
805.02 Pg 597
807.03 Pg 612

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision
Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Recurring Special Provisions potentially affected:

None

Standard Sheets potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 904, BEGIN LINE 539, DELETE AND INSERT AS FOLLOWS:

(c) For SMA Mixtures. Fine aggregate for SMA shall be limestone, dolomite, crushed gravel, SF, or ACBF. SF sand may be used only when the coarse aggregate is SF. Crushed gravels shall have a minimum fine aggregate angularity of 45 in accordance with AASHTO T 304 Method A. Fine aggregates shall be non-plastic in accordance with AASHTO T 90.

(e d) For Pneumatically Placed Mortar. Fine aggregate shall be natural sand suitable for use with a pneumatic cement gun. Fine aggregate shall be size No. 15, or size PP in accordance with 904.02(g), or an approved gradation from a CAPP source.

(d e) Mortar Sand. Fine aggregate for mortar shall consist of uniformly graded natural sand in accordance with gradation requirements of 904.02(g) for size No. 15 or an approved gradation from a CAPP source.

(e f) Blank. Mineral Filler for SMA. Mineral filler shall consist of dust produced by crushing stone, portland cement, or other inert mineral matter having similar characteristics. Mineral filler shall be in accordance with the gradation requirements of 904.02(b) for size No. 16. Mineral filler shall be in accordance with ITM 203 or from an ABF slag source. The sieve analysis of mineral filler shall be conducted in accordance with AASHTO T 37 except as noted in 904.04. Mineral filler shall be non-plastic in accordance with AASHTO T 90.

(f g) Snow and Ice Abrasives. Snow and ice abrasives shall be fine aggregates or cinders in accordance with the gradation requirements of 904.02(g) for size S&I.

When steel slag is used as snow and ice abrasives, and payment is on a tonnage basis, the pay quantity shall be adjusted in accordance with 904.01.

(g h) Sizes of Fine Aggregates.

	SIZES (PERCENT PASSING)					
Sieve Sizes	23 Note 1	24 Note 1	15 Note 1	16	PP	S&I
9.5 mm (3/8 in.)	100	100				100
4.75 mm (No. 4)	95-100	95-100			100	
3.35 mm (No. 6)			100			
2.36 mm (No. 8)	80-100	70-100	90-100		85-95	
1.18 mm (No. 16)	50-85	40-80				
600 μm (No. 30)	25-60	20-60	50-75	100	50-65	
300 μm (No. 50)	5-30	7-40	15-40		15-25	0-30
180 μm (No. 80)				95-100		
150 μm (No. 100)	0-10	1-20	0-10		0-10	
75 μm (No. 200)	0-3	0-6	0-3	65-100		0-7

Note 1: The fine aggregate shall have not more than 45% retained between any 2 consecutive sieves.

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 904 CONTINUED.

(h i) Sampling and Testing. *Sampling and testing shall be conducted in accordance with the following AASHTO and ITMs:*

Acid Insoluble Content ..... ITM 202
**Amount of Material Finer than 75 µm (No. 200) sieve ..... AASHTO T 11*
Brine Freeze-and-Thaw Soundness ..... ITM 209
Control Procedures for Classification of Aggregates ..... ITM 203
Determining the Plastic Limit and Plasticity Index of Soils ..... AASHTO T 90
Mortar Strength ..... AASHTO T 71
Organic Impurities ..... AASHTO T 21
Sampling Aggregates ..... AASHTO T 2
Sampling Stockpiled Aggregates ..... ITM 207
**Sieve Analysis of Aggregate ..... AASHTO T 27*
**Sieve Analysis of Mineral Filler ..... AASHTO T 37*
**Soundness ..... AASHTO T 103, T 104*
Specific Gravity and Absorption, Fine Aggregate ..... AASHTO T 84

**Except as noted in 904.06.*

Other sections containing specific cross references:

605.07(c) Pg 365
708.02 Pg 712 SS
914.05(b) Pg 861

Recurring Special Provisions potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision
Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Standard Sheets potentially affected:

None

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

Item No. 49-50
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 904, BEGIN LINE 589a, INSERT AS FOLLOWS:

Characteristic Classes	*AP*	*AS*	*A*	*B*	*C*	*D*	*E*	*F*
Quality Requirements								
Freeze-and-Thaw Beam Expansion, % Max. (Note 1)	*.060*							
Los Angeles Abrasion, %, Max (Note 2)	*40.0*	*30.0*	*40.0*	*40.0*	*45.0*	*45.0*	*50.0*	
Sodium Sulfate Soundness, %, Max. (Note 3)	*12.0*	*12.0*	*12.0*	*12.0*	*16.0*	*16.0*	*20.0*	*25.0*
Brine Freeze-and-Thaw Soundness, % Max. (Note 4)	*30*	*30*	*30*	*30*	*40*	*40*	*50*	*60*
Absorption, %, Max. (Note 5)	*5.0*	*5.0*	*5.0*	*5.0*	*5.0*			
Additional Requirements								
Deleterious, %, Max.								
Clay Lumps and Friable Particles	*1.0*	*1.0*	*1.0*	*1.0*	*2.0*	*4.0*		
Non-Durable (Note 6)	*4.0*		*4.0*	*4.0*	*6.0*	*8.0*		
Soft Particles		*2.0*						
Structurally Weak		*2.0*						
Coke					*(See*	*Note 7)*		
Iron					*(See*	*Note 7)*		
Chert (Note 8)	*3.0*	*3.0*	*3.0*	*5.0*	*8.0*	*10.0*		
Mass Per Cubic Meter for Slag, kg	*1200*		*1200*	*1200*	*1120*	*1120*	*1120*	
Weight Per Cubic Foot for Slag, (lbs), Min	*(75.0)*		*(75.0)*	*(75.0)*	*(70.0)*	*(70.0)*	*(70.0)*	
Crushed Particles, %, Min. (Note 9)								
Asphalt Seal Coats			*70.0*	*70.0*				
Compacted Aggregates			*20.0*	*20.0*	*20.0*	*20.0*		

NOTES:

1. *Freeze-and-thaw beam expansion shall be tested and retested in accordance with ITM 210.*
2. *Los Angeles abrasion requirements shall not apply to BF.*
3. *Aggregates may, at the option of the Engineer, be subjected to 50 cycles of freezing and thawing in accordance with AASHTO T 103, Procedure A, and may be accepted, provided they do not have a loss greater than specified for Sodium Sulfate Soundness.*
4. *Brine freeze-and-thaw soundness requirements are subject to the conditions stated in Note 3.*
5. *Absorption requirements apply only to aggregates used in PCC and HMA mixtures except they shall not apply to BF. When crushed stone coarse aggregates from Category I sources consist of production from ledges whose absorptions differ by more than two percentage points, the absorption test will be performed every three months on each size of material proposed for use in PCC or HMA mixtures. Materials having absorption values between 5.0 and 6.0 that pass AP testing may be used in PCC. If variations in absorption preclude satisfactory production of PCC or HMA mixtures, independent stockpiles of materials will be sampled, tested, and approved prior to use.*
6. *Non-durable particles include soft particles as determined by ITM 206 and other particles which are structurally weak, such as soft sandstone, shale, limonite concretions, coal, weathered schist, cemented gravel, ocher, shells, wood, lime agglomerates, or other objectionable material. Determination of non-durable particles shall be made from the total mass (weight) of material retained on the 9.5 mm (3/8 in.) sieve. Scratch Hardness Test shall not apply to crushed stone coarse aggregate.*
7. *ACBF and SF coarse aggregate shall be free of objectionable amounts of coke and iron.*
8. *The bulk specific gravity of chert shall be based on the saturated surface dry condition. The amount of chert less than 2.45 bulk specific gravity shall be determined on the total mass (weight) of material retained on the 9.5 mm (3/8 in.) sieve for sizes 2 through 8, 43, 53, and 73, and on the total mass (weight) of material retained on the 4.75 mm (No. 4) sieve for sizes 9, 11, 12, and 91.*
9. *Crushed particle requirements apply to gravel coarse aggregates used in compacted aggregates, and seal coats except seal coats used on shoulders. Determination of crushed particles shall be made from the weight (mass) of material retained on the 4.75 mm (No. 4) sieve in accordance with ASTM D 5821.*

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 904 CONTINUED.

Other sections containing specific cross references:

None

Recurring Special Provisions potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision
Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Standard Sheets potentially affected:

None

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

Item No. 49-51
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 904, BEGIN LINE 618, DELETE AND INSERT AS FOLLOWS:

(b) Coarse Aggregate Angularity <u>for HMA and SMA</u>. *The coarse aggregate angularity (CAA) ~~value~~ of the total blended aggregate~~ material~~, including recycled materials, shall meet or exceed the minimum values for the appropriate ESAL category and position within the pavement structure as follows:*

SECTION 904, AFTER LINE 623, INSERT AS FOLLOWS:

For SMA mixtures total blended aggregate shall be 100% one face and 95% two face crushed.

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

Item No. 49-52
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 904, BEGIN LINE 641, DELETE AND INSERT AS FOLLOWS:

(d) Surface Aggregate Requirements for HMA and SMA. *The surface mixture aggregate selection shall be based on the ESAL category as follows:*

Coarse Aggregate Type	*Traffic ESAL*		
	< 3,000,000	*< 10,000,000*	*≥ 10,000,000*
Air-Cooled Blast Furnace Slag (Note 1)	*Yes*	*Yes*	*Yes*
Steel Furnace Slag	*Yes*	*Yes*	*Yes*
Sandstone	*Yes*	*Yes*	*Yes*
Crushed Dolomite	*Yes*	*Yes*	*Note ~~1~~ 2*
Polished Resistant Aggregates	*Yes*	*Yes (Note 1)*	*Note 1, 2*
Crushed Stone	*Yes*	*No*	*No*
Gravel	*Yes*	*No*	*No*

Note 1. ACBF or Gravel may not be used in SMA mixtures.

Note ~~1~~2. Polish resistant aggregates or crushed dolomite may be used when blended with ACBF or sandstone but cannot exceed 50% of the coarse aggregate by mass (weight), or cannot exceed 40% of the coarse aggregate by mass (weight) when blended with steel furnace slag.

Other sections containing specific cross references:

401.03 Pg 401 SS
402.03 Pg 419 SS
402.07(a) Pg 420 SS
402.07(b) Pg 420 SS
504.03(e) Pg 528 SS
604.07(c) Pg 613 SS

Recurring Special Provisions potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision
Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Standard Sheets potentially affected:

None

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

Item No. 49-53
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 906, BEGIN LINE 18, DELETE AND INSERT AS FOLLOWS:

b. Field Evaluation. All silicone joint sealants complying with the physical requirements will be subjected to a field evaluation before approval for general use is granted. The Department will maintain a List of ~~the~~ *Approved* Joint Sealant~~s~~ *materials, which* comply with the physical requirements and field evaluation.

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

Item No. 49-54
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 906, BEGIN LINE 30, DELETE AND INSERT AS FOLLOWS:

The approved sealants which are self leveling shall be identified as such on the *Department's* ~~Approved~~ List of *Approved* Joint Sealants *materials,* and will not require tooling. Sealants not identified as self leveling on the approved list shall be tooled or applied in such a manner which causes them to wet the joint faces. Such sealants which are not formulated for self leveling will not position properly in the joint under its own mass (weight). A backer rod as set out herein shall be used to control sealant configuration and facilitate tooling. Applicable joint configurations shall be as shown on the plans. After a joint has been sealed, all surplus joint sealer on the pavement surfaces shall be promptly removed. Traffic shall not be permitted over sealed joints until the sealer is tack free.

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

Item No. 49-55
Mr. Miller
Date: 6/17/04

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 906, AFTER LINE 84, INSERT AS FOLLOWS:

4. Asphalt Rubber Sealant.

a. Requirements. The asphalt rubber sealant shall be a single component asphalt sealant that contains a minimum of 18 percent recycled rubber by weight of asphaltic components. Seventy percent of the rubber shall be ground reclaimed rubber. The asphalt rubber sealant shall be in accordance with ASTM D 6690, type I.

b. Packaging. The asphalt rubber sealant shall be delivered in the manufacturer's original sealed packaging. Each container shall be marked legibly with the manufacturer's name, name of the material, the batch or lot number, the expiration date, the recommended pouring temperature, and the safe heating temperature.

c. Installation. The rubber asphalt sealant shall be installed in accordance with manufacturer's recommendations. The backer rod shall be in accordance with manufacturer's specifications and 906.02(3)b if a backer rod is required.

d. Certification. The Contractor shall supply a type A certification in accordance with 916 for each batch or lot of material furnished.

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 912, BEGIN LINE 62, DELETE AND INSERT AS FOLLOWS:

912.03 Admixtures for Use in Concrete. *Admixtures for use in PCC shall be selected from the Department's Approved List of Admixtures for PCC. An admixture may be added to the approved list by completing the requirements in ITM 806., Procedure D.* Admixtures containing chloride added as an ingredient of manufacture are unacceptable.

(a) Air Entraining Admixtures. Air entraining admixtures are materials to be added to ~~portland cement concrete~~ *PCC* mixtures at the mixer for the purpose of entraining air. ~~These admixtures shall be in accordance with AASHTO M 154.~~

(b) Chemical Admixtures for Concrete. Chemical admixtures are materials to be added to ~~portland cement concrete~~ *PCC* mixtures at the mixer for the purpose or purposes indicated below. ~~The admixtures shall be in accordance with AASHTO M 194 for their respective types.~~

1. Type A. Type A is a water reducing admixture that reduces the quantity of mixing water required to produce concrete of a given consistency.

2. Type B. Type B is a retarding admixture that retards the setting of concrete.

3. Type C. Type C is a accelerating admixture that accelerates the setting and early strength development of concrete.

4. Type D. Type D is a water reducing and retarding admixture that reduces the quantity of mixing water required to produce concrete of a given consistency and retards the setting of concrete.

5. Type E. Type E is a water reducing and accelerating admixture that reduces the quantity of mixing water required to produce concrete of a given consistency and accelerates the setting and early strength development of concrete.

6. Type F. Type F is a high range water reducing admixture, HRWR, that reduces the quantity of mixing water required to produce concrete of a given consistency by 12% or greater.

7. Type G. Type G is a high range water reducing and retarding admixture, HRWRR, that reduces the quantity of mixing water required to produce concrete of a given consistency by 12% or greater and retards the setting of concrete.

8. High Range Water Reducing Admixture System. *HRWR admixture system is a combination of admixtures that act as a type F admixture within a concrete mixture. The system consists of chemical admixtures and an air entraining admixture. One of the components shall be a type F admixture. Components shall be in accordance with 912.03 for their respective types.*

9. High Range Water Reducing and Retarding Admixture System. *HRWRR admixture system is a combination of admixtures that act as a type G admixture within a concrete mixture. The system consists of chemical admixtures and an air entraining admixture. One of the components shall be a type F or a type G admixture. One of the components shall retard the setting of the concrete. Components shall be in accordance with 912.03 for their respective types.*

~~8. High Range Water Reducing and High Range Water Reducing and Retarding Admixture Systems. HRWR and HRWRR admixture systems typically utilize an air entraining agent; a type A or type D chemical admixture; and a type F chemical admixture, for HRWR, or a type G chemical admixture, for HRWRR.~~

~~(c) Certification. Prior to furnishing admixtures, each manufacturer shall furnish to Division of Materials and Tests a certification in accordance with the following:~~

~~1. For air entraining admixtures manufactured by neutralizing Vinsol resin with sodium hydroxide in accordance with AASHTO T 157, the certification shall certify that:~~

~~a. the product is (brand name);~~

~~b. is manufactured by (manufacturer's name);~~

~~c. is an aqueous solution of Vinsol resin that has been neutralized with sodium hydroxide;~~

~~d. the ratio of sodium hydroxide to Vinsol resin is one part of sodium hydroxide to (number) parts of Vinsol resin by mass (weight);~~

~~e. the percentage of solids based on residue at 105EC (221EF) is (number);~~

~~f. no other additive or chemical agent is present in this solution.~~

~~If the air entraining admixture is manufactured in proportions other than set out in AASHTO T 157 for the referenced admixture, the certification shall include a dated test report substantiating compliance with the specifications.~~

~~2. For type A, B, C, D, and E admixtures, the certification shall:~~

~~a. state the chloride content;~~

~~b. state whether or not chloride is added as an ingredient of manufacture;~~

~~c. state that the admixture complies with these specifications;~~

~~d. include a dated test report substantiating full compliance with the specifications. If irregularities are found in the test results required for the aforementioned certification, copies of the original data may~~

~~be required to be submitted prior to reconsideration of the certification.~~

~~3. For HRWR and HRWRR admixture systems that contain an air entraining agent; a type A or type D chemical admixture; and a type F or type G chemical admixture, the certification shall:~~

~~a. state the product names;~~

~~b. state the manufacturer's name(s);~~

~~c. state the character of the materials;~~

~~d. state the chloride contents;~~

~~e. state whether or not chloride is added as an ingredient of manufacture;~~

~~f. state that the type A or type D chemical admixture and the air entraining agent is in accordance with 912.03(c) for their respective types;~~

~~g. include a dated test report substantiating full compliance of the type F or type G chemical admixture with 912.03(c) and AASHTO M 194;~~

~~h. include a dated test report substantiating full compliance of the HRWR or HRWRR admixture system with AASHTO M 194 for type F or type G chemical admixture, except as follows:~~

(c) Test Report. *Testing shall be performed by a recognized laboratory in accordance with ITM 806 ~~for their respective types~~.*

1. Air entraining admixtures shall be in accordance with AASHTO M 154.

2. Chemical admixtures shall be in accordance with AASHTO M 194 for their respective types. ~~except that the test report for HRWR and HRWRR admixture systems shall be in accordance with the following additional requirements:~~

~~(1) *a.* The HRWR or HRWRR admixture system shall be used in the test concrete.~~

~~(2) The control concrete shall contain the same air entraining agent used in the HRWR or HRWRR admixture system.~~

~~(3) *b.* The six month and one year compressive strength testing will be waived and flexural strength testing will not be required.~~

(4) *c.* Uniformity and equivalence testing will not be required.

(5) *d.* Testing for length change shall *will* not be required.

(6) *e.* A sample of the test concrete containing the HRWR or HRWRR admixture system shall be tested for hardened concrete air void system analysis in accordance with ASTM C 457. The sample for hardened concrete air void system analysis shall indicate an air content of at least 4.5% for class C, and 5.2% for class A; a voids per millimeter (inch) parameter of at least 0.0492 (1.25) times the air content; a spacing factor of 0.254 mm (0.010 in.) or less; and a specific surface of 19.685 mm^2/mm^3 (500 $in.^2/in.^3$).

4. For HRWR and HRWRR admixture systems that contain only an air entraining agent and a type F or type G chemical admixture, the certification shall:

a. state the product names;

b. state the manufacturer's name(s);

c. state the character of the materials;

d. state the chloride contents;

e. state whether or not chloride is added as an ingredient of manufacture;

f. state that the air entraining agent is in accordance with 912.03(c);

g. include a dated test report substantiating full compliance of the type F or type G chemical admixture with 912.03(c) and AASHTO M 194 except as follows:

(1) The HRWR or HRWRR admixture system shall be used in the test concrete.

(2) The control concrete shall contain the same air entraining agent used in the HRWR or HRWRR admixture system.

(3) A sample of the test concrete containing the HRWR or HRWRR admixture system shall be tested for hardened concrete air void system analysis in accordance with ASTM C 457. The sample for hardened concrete air void system analysis shall indicate an air content of at least 4.5% for class C, and 5.2% for class A; a voids per millimeter (inch) parameter of at least 0.0492 (1.25) times the air content; a spacing factor of 0.254 mm (0.010 in.) or less; and a specific surface of 19.685 mm^2/mm^3 (500 $in.^2/in.^3$).

~~5~~ *3.* ~~The tests shall be performed by a recognized laboratory which is a state highway agency testing laboratory, or a cement or concrete laboratory regularly inspected by the CCRL. Proof of such inspection shall be furnished on request. The test report shall be dated to establish when the testing was started.~~ Test reports *shall not be* more than five years old on January 1 of the approval year ~~will be unacceptable~~. *New submittals of ~~AASHTO M 194~~ test reports more than five years old will be accepted, if all subsequent five year limited retest reports are submitted. Subsequent limited retest results shall comply with the dating and age requirements specified above and shall include the following ~~AASHTO M 194~~ tests as a minimum requirement for compliance.*

~~After the certification specified in the preceding paragraph has been approved and provided that the required test results are still not more than five years old as specified above, each manufacturer shall submit an annual certification of compliance with those specifications as previously described except, if there has been no change in raw materials, formulation, or procedures, test results will not be required. The certification shall indicate that the material is of the same formulation as that for which test results have been submitted. When the initially submitted complete test results are more than five years old as specified above, a complete certification with new limited retest results shall be required. These limited retest results shall comply with the dating and age requirements specified above and shall include the following AASHTO M 194 test as a minimum requirement for compliance:~~

a. infrared analysis, residue by oven drying, and specific gravity;

b. water content and time of setting ~~as referenced in AASHTO MC 194~~;

c. flexural strength at three, seven, and 28 days;

d. relative durability.

~~**(d) Approved Admixtures.** The Department will maintain a list of Approved Admixtures and Approved Admixture Systems.~~

~~**(e) Performance of Admixtures.** The use of concrete admixtures which results in unsatisfactory performance will be prohibited.~~

REVISION TO 1999 STANDARD SPECIFICATIONS

SECTION 912, CONTINUED.

Other sections containing specific cross references:

213.02 Pg 230 SS
216.02 Pg 237 SS
501.03 Pg 501 SS
502.02 Pg 516 SS
506.02 Pg 535 SS
702.03 Pg 437
722.02 Pg 552

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision

Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Recurring Special Provisions potentially affected:

912-R-473

Standard Sheets potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

Item No. 49-57
Mr. Cales
Date: 6/17/04

PROPOSED STANDARD DRAWINGS

706-BRTF-01, Concrete Bridge Railing Type TF-2
706-BRTF-02, Concrete Bridge Railing Type TF-2
706-BRTF-03, Concrete Bridge Railing Type TF-2, Misc. Details
706-BRTF-04, Concrete Bridge Railing Type TF-2
706-BRTF-05, Concrete Bridge Railing Type TF-2 Details
706-BRTF-06, Concrete Bridge Railing Type TF-2
706-BRTF-07, Concrete Bridge Railing Type TF-2
706-BRTF-08, Concrete Bridge Railing Type TF-2, Railing Splice Detail
706-BRTF-09, Concrete Bridge Railing Type TF-2
706-BRTF-10, Concrete Bridge Railing Type TF-2
706-BRTF-11, Concrete Bridge Railing Type TF-2
706-BRTF-12, Thrie Beam to Concrete Bridge Railing Type TF-2
706-BRTF-13, Thrie Beam to Concrete Bridge Railing Type TF-2 Transition Connection
706-BRTF-14, Thrie Beam to Concrete Bridge Railing Type TF-2 Transition Connection
706-BRTF-15, Concrete Bridge Railing Type TF-2
706-BRTF-16, Concrete Bridge Railing Type TF-2 Miscellaneous Details
706-BRTF-17, Concrete Bridge Railing Type TF-2 Miscellaneous Details
706-BRTF-18, Concrete Bridge Railing Type TF-2 Miscellaneous Details

Other sections containing specific cross references:

None

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision

Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Recurring Special Provisions potentially affected:

None

Standard Sheets potentially affected:

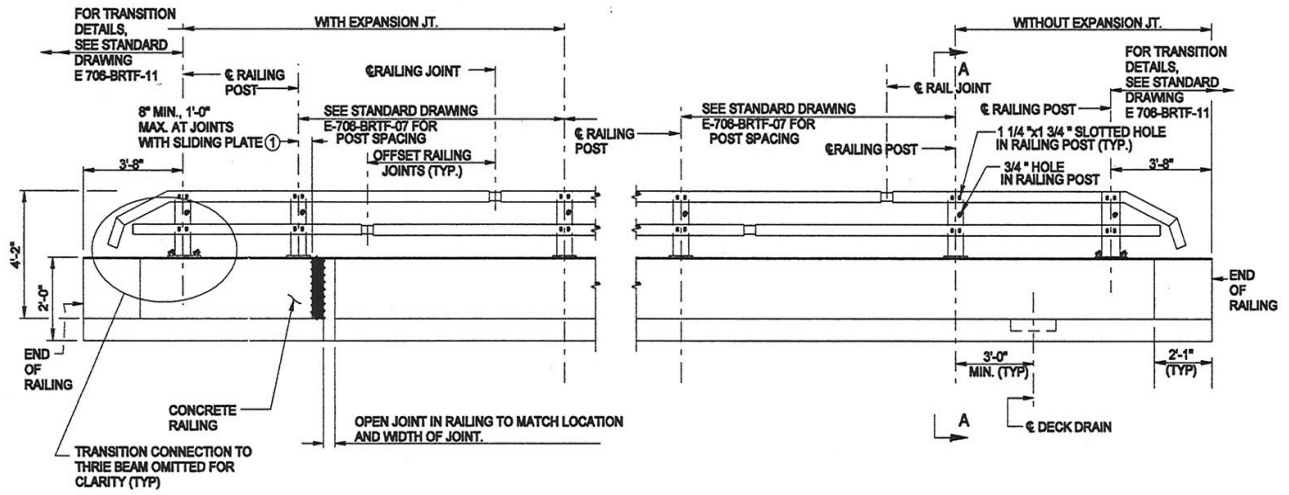
See Above

Motion: Mr.
Second: Mr.
Ayes:
Nays:

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____



CONCRETE BRIDGE RAILING TYPE TF-2

ELEVATION

NOTES:

① ℄ RAILING POST TO EDGE OF RECESS IN CONCRETE (SHOWN) OR ℄ RAILING POST TO EDGE OF FIXED END OF SLIDING PLATE

② NO POST REQUIRED ADJACENT TO FLUSH JOINTS AT WINGWALL IF POSTS LOCATED AT EXPANSION JOINT

3 See Standard Drawing E 706-BRTF-02 FOR SECTION A - A.

4 See Standard Drawing E 703-BRST-01 for bending details and reinforcing steel notes.

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAINLING TYPE TF-2

MARCH 2005

STANDARD DRAWING NO. E 706-BRTF-01

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

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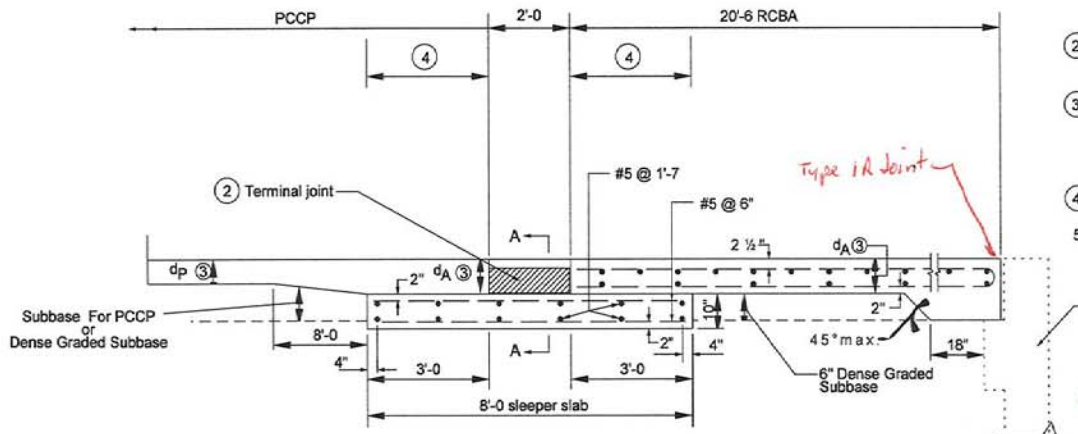
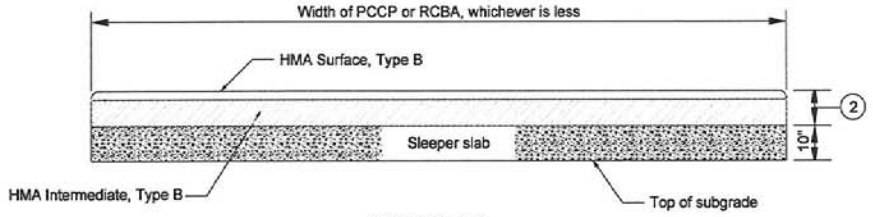


GENERAL NOTES

1. For reinforcement details, see Standard Drawing 609-RCBA-03 for square RCBAs and Standard Drawing 609-RCBA-04 for skewed RCBAs.
2. Terminal joint elevation shall match elevation of adjacent PCCP and RCBA.
3. Depth d_A must equal d_P. However, if d_P s less than 12 in., d_A must be 12 in.
4. Limits of polyethylene bond breaker.
5. All reinforcing bars in the reinforced concrete bridge approach shall be epoxy coated.
6. See Standard Drawings 609-RCBA-03 & 609-BRJT-01 for details of Type 1A Joint.

TERMINAL JOINT FOR PCCP AT BRIDGE STRUCTURE

OK JEJ 5/10/04



SECTION A-A

INDIANA DEPARTMENT OF TRANSPORTATION

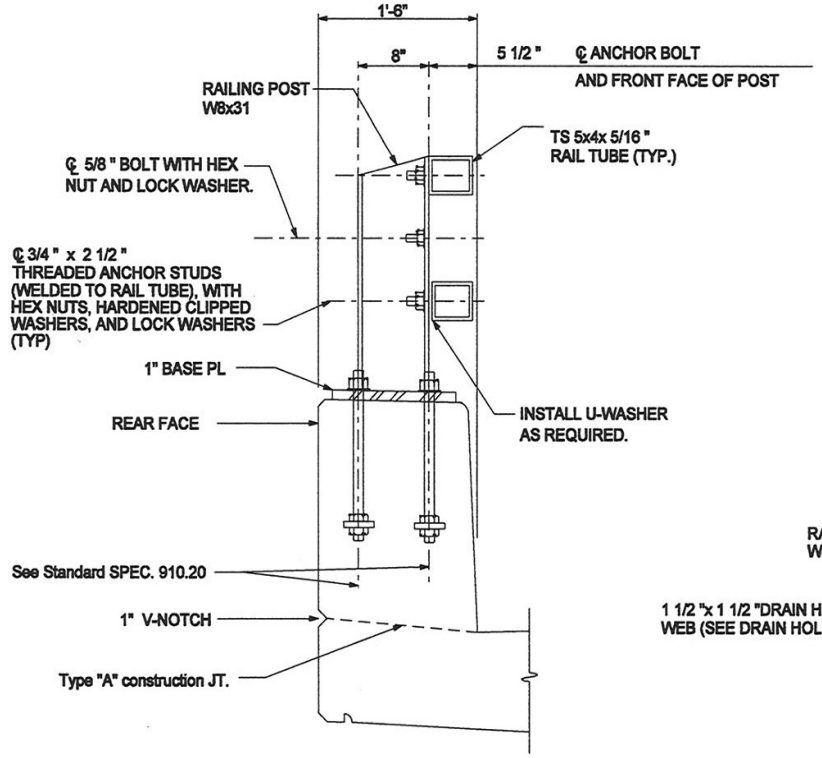
REINFORCED CONCRETE BRIDGE APPROACH AND TERMINAL JOINT FOR USE WITH PCCP
MARCH 2004

STANDARD DRAWING NO. E 609-RCBA-02

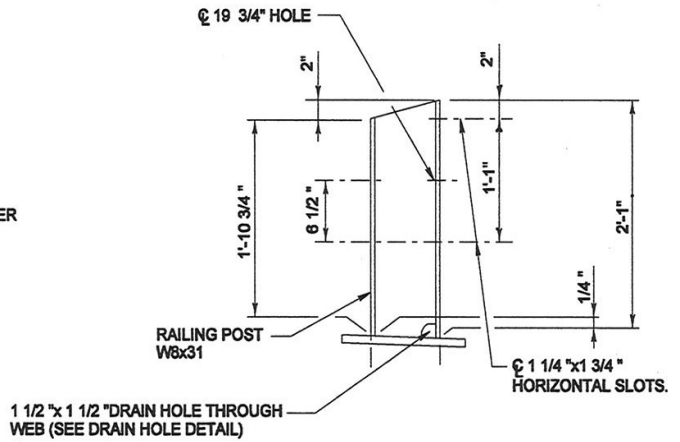
RICHARD L. VANCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER
DESIGN STANDARDS ENGINEER

/s/ Richard L VanCleave — DESIGN STANDARDS ENGINEER — 3-01-04 DATE

/s/ Richard K Snutzer — CHIEF HIGHWAY ENGINEER — 3-01-04 DATE



RAILING SECTION



ELEVATION-POST

TYPICAL RAILING

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING
TYPE TF-2
MISCELLANEOUS DETAILS

MARCH 2005

STANDARD DRAWING NO. E 706-BRTF-03

RICHARD L. VOELKER REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER
DESIGN STANDARDS ENGINEER

DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

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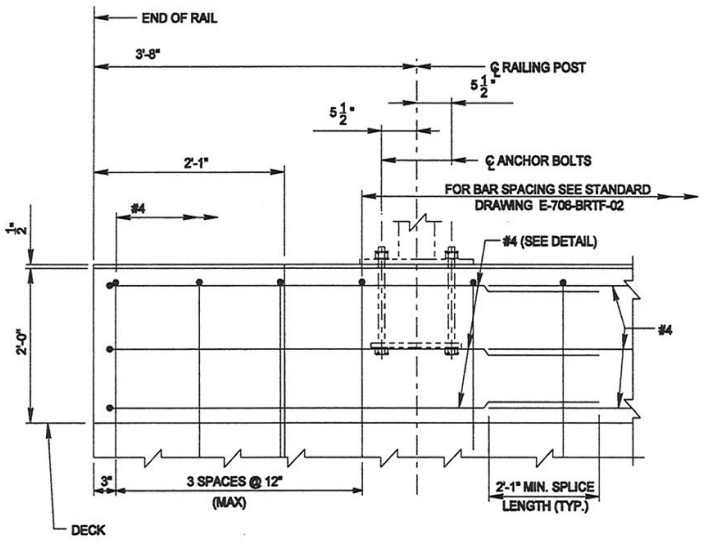
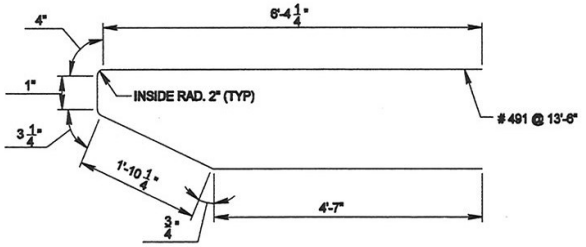


ELEVATION VIEW

CONCRETE RAIL TERMINATION SECTION



REINFORCEMENT DETAIL

(AT END OF RAILING)

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TYPE TF-2

MARCH 2005

STANDARD DRAWING NO. E 706-BRTF-04

RICHARD L. KINCLEINE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER
DESIGN STANDARDS ENGINEER

DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

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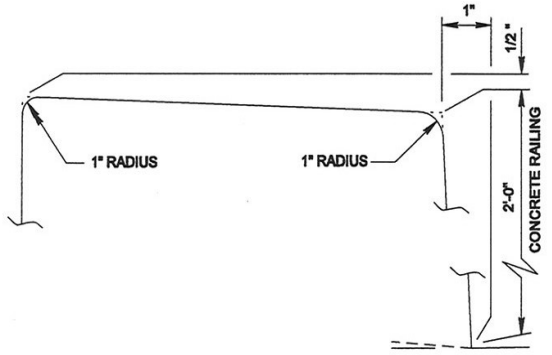
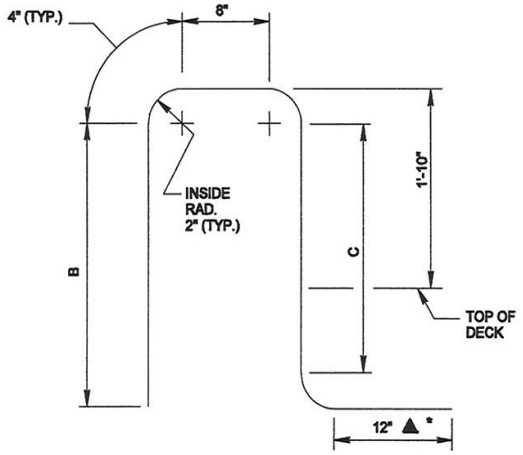


RAILING DETAIL

(BASE PLATE AND ANCHOR BOLTS NOT SHOWN FOR CLARITY)



#492 @ (VARIABLE LENGTH)

NOTES:

1. T DESIGNATES DECK SLAB THICKNESS (SEE DRAWING E 706-BRTF-02 "TYPICAL SECTION")
2. REINFORCING STEEL #4 BAR AT 18" MAXIMUM SPACING (SEE STANDARD DRAWING E 706-BRTF-02).

B & C DIMENSIONS FOR TYPE TF-2 BRIDGE RAILING		
T	B	C
8.0"	2'-2½"	1'-11"
8.5"	2'-3"	1'-11½"
9.0"	2'-3½"	2'-0"
9.5"	2'-4"	2'-0½"
10.0"	2'-4½"	2'-1"
10.5"	2'-5"	2'-1½"
11.0"	2'-5½"	2'-2"
11.5"	2'-6"	2'-2½"

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TYPE TF-2 DETAILS

MARCH 2005

STANDARD DRAWING NO. E 706-BRTF-05

RICHARD L. VONCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

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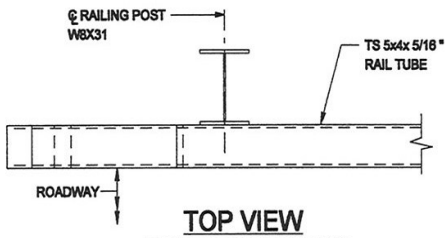
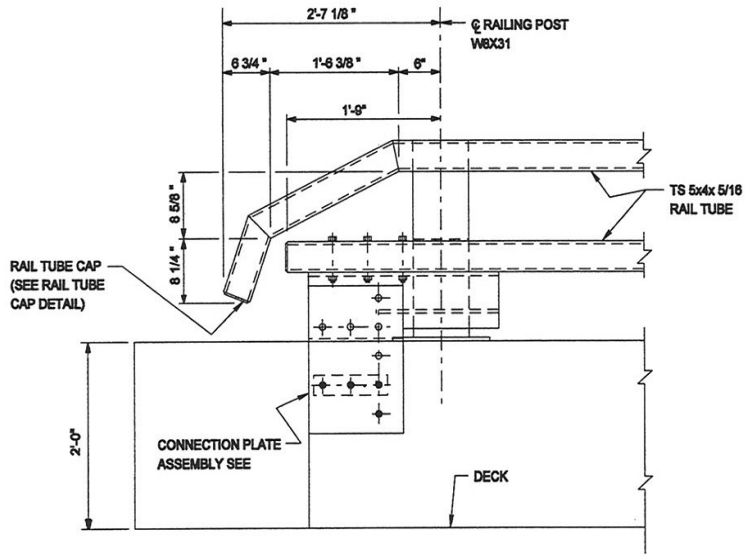


TOP VIEW
(CONCRETE RAILING NOT SHOWN)



RAILING ELEVATION AT ENDS

NOTES:

1. FOR RAIL SECTION VIEW SEE E 706-BRTF-03.
2. FOR RAIL TUBE CAP DETAILS SEE E 706-BRTF-10

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING
TYPE TF-2

MARCH 2005

STANDARD DRAWING NO. E 706-BRTF-06

RICHARD L. VONCLEVE
REGISTERED
No. 9750
STATE OF INDIANA
PROFESSIONAL ENGINEER
DESIGN STANDARDS ENGINEER

DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

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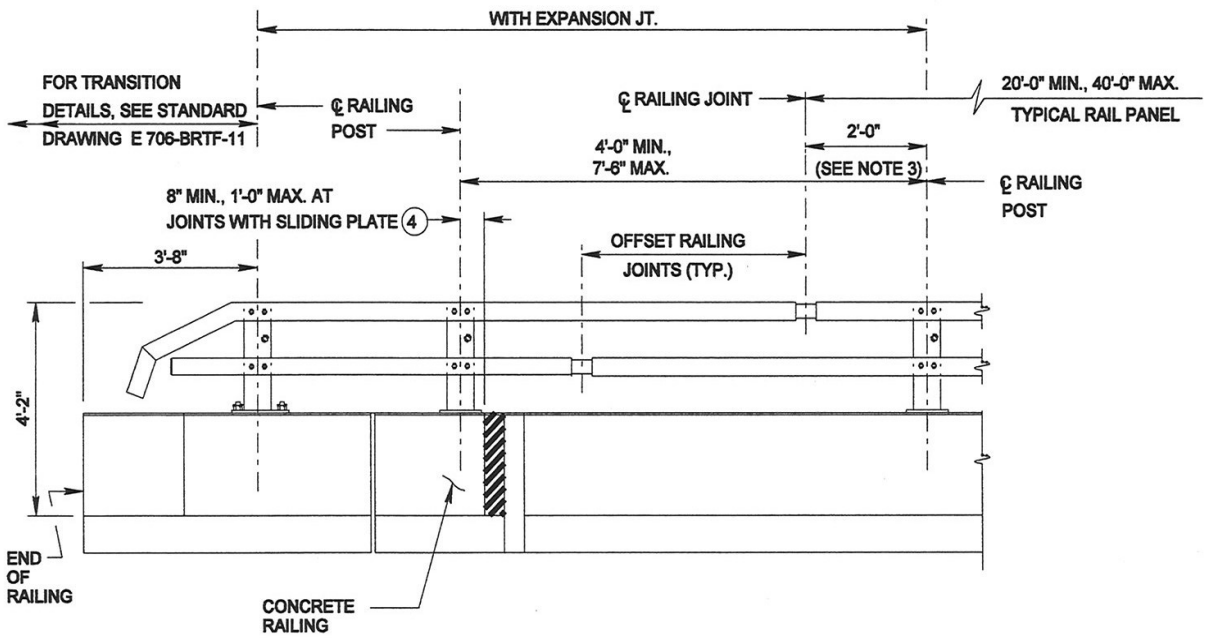

TYPICAL PARTIAL CONCRETE BRIDGE RAILING
TYPE TF-2 ELEVATION VIEW

(WITHOUT INLET PLACEMENT SHOWN;
WITH INLET PLACEMENT SIMILAR)

NOTES

1 SPACING OF JOINTS IN TUBE STEEL
MAXIMUM: 40 FT MINIMUM: 20 FT

2 POST SPACING MAXIMUM: 7'-6"
MINIMUM: 4'-0"

3 DISTANCE FROM CENTERLINE OF SPLICEING
TO CENTERLINE OF RAILING POST: MAXIMUM: 30"
MINIMUM: 18"

4 ℄ RAILING POST TO EDGE OF RECESS IN CONCRETE (SHOWN)
OR ℄ RAILING POST TO EDGE OF FIXED END OF SLIDING PLATE

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING
TYPE TF-2

MARCH 2005

STANDARD DRAWING NO. E 706-BRTF-07

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER
DESIGN STANDARDS ENGINEER

DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

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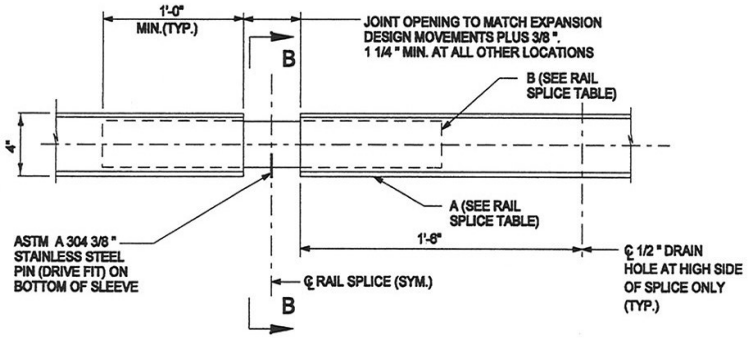
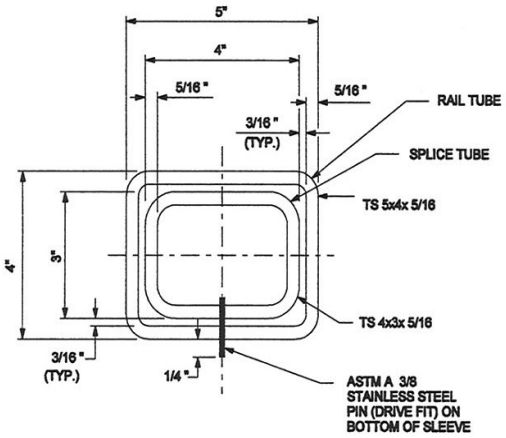


RAIL SPLICE DETAIL

TS 5x4x 5/16 RAIL SPLICE SHOWN;
TS 2x2x 1/4 RAIL SPLICE SIMILAR



SECTION B-B

RAIL SPLICE TABLE	
A (RAIL TUBE)	B (SPLICE TUBE)
TS 5x4x 5/16	TS 4x3x 5/16
TS 2x2x 1/4	1 1/4 "x1 1/4 ROD 36 KSI

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TYPE TF-2. RAILING SPLICE DETAIL

MARCH 2005

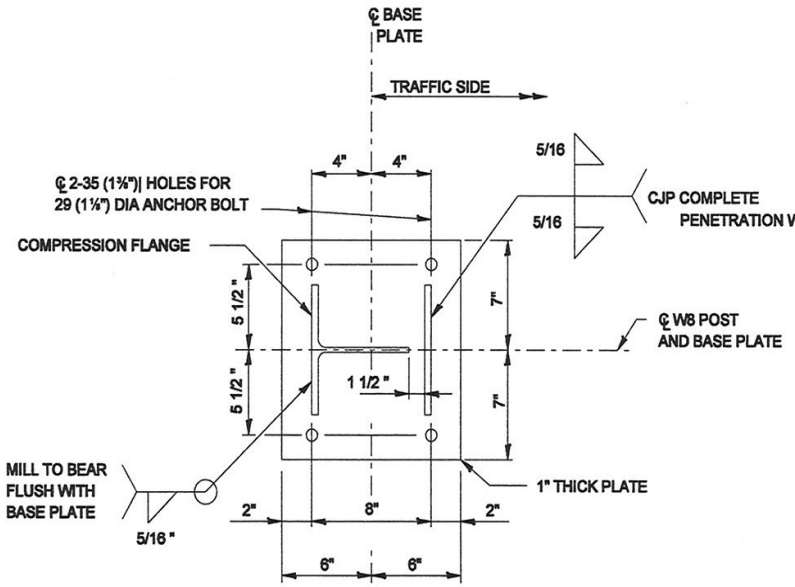
STANDARD DRAWING NO. E 706-BRTF-08

RICHARD L. VANCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

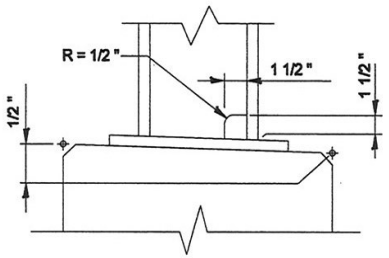
DESIGN STANDARDS ENGINEER

DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE



POST TO BASE PLATE DETAIL2



DRAIN HOLE DETAIL

NOTES:

1. $1\frac{3}{8}$" HOLES FOR $1\frac{1}{8}$" ANCHOR BOLT.
2. SEE STANDARD SPECIFICATION 711.36

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TYPE TF-2

MARCH 2005

STANDARD DRAWING NO. E 706-BRTF-09

RICHARD L. VANCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

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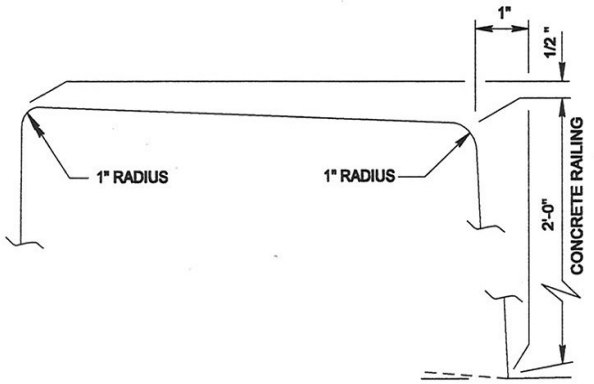
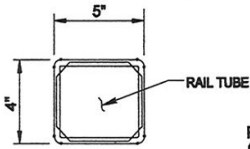


RAILING DETAIL

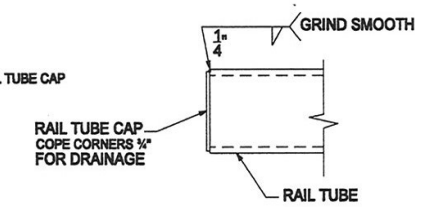
(BASE PLATE AND ANCHOR BOLTS NOT SHOWN FOR CLARITY)

RAIL TUBE CAP SIZE	
MEMBER	RAIL TUBE CAP
TS $5" \times 4" \times \frac{5}{16}"$	PL $\frac{3}{16}" \times 3\frac{5}{8}" \times 4\frac{5}{8}"$
TS $2" \times 2" \times \frac{1}{4}"$	PL $\frac{3}{16}" \times 1\frac{5}{8}" \times 1\frac{5}{8}"$

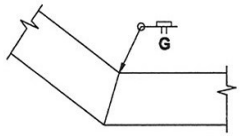


END VIEW

(END CONNECTION ANGLE NOT SHOWN FOR CLARITY)



ELEVATION VIEW



TYPICAL WELD AT MITERS

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TYPE TF-2

MARCH 2005

STANDARD DRAWING NO. E 706-BRTF-10

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

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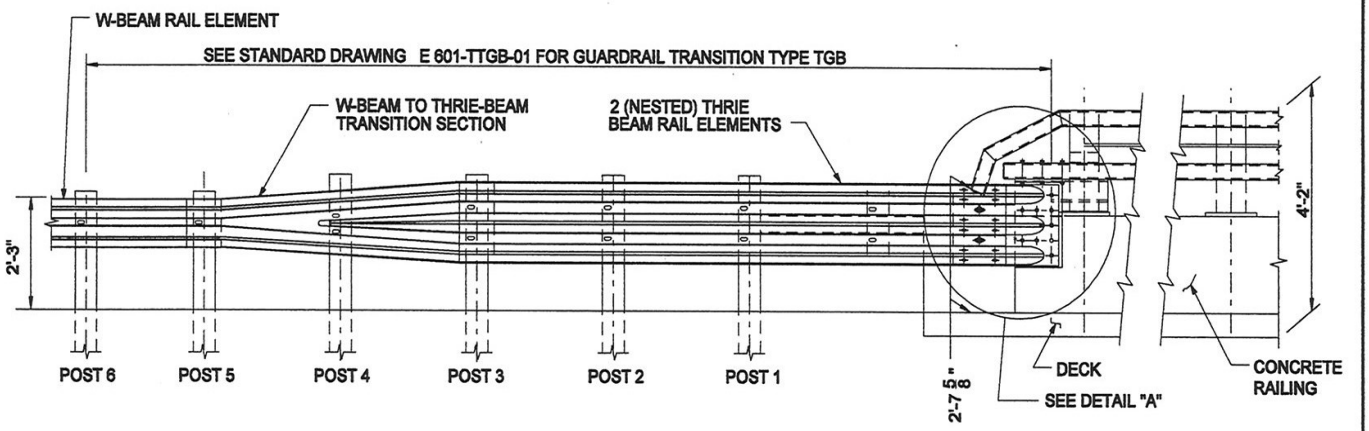

ELEVATION VIEW FOR THRIE-BEAM CONCRETE BRIDGE RAILING TYPE TF-2

NOTES:

1. SEE STANDARD DRAWING E 706-BRTF-13 FOR DETAIL "A".

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TYPE TF-2

MARCH 2005

STANDARD DRAWING NO. E 706-BRTF-11

RICHARD L. VANCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

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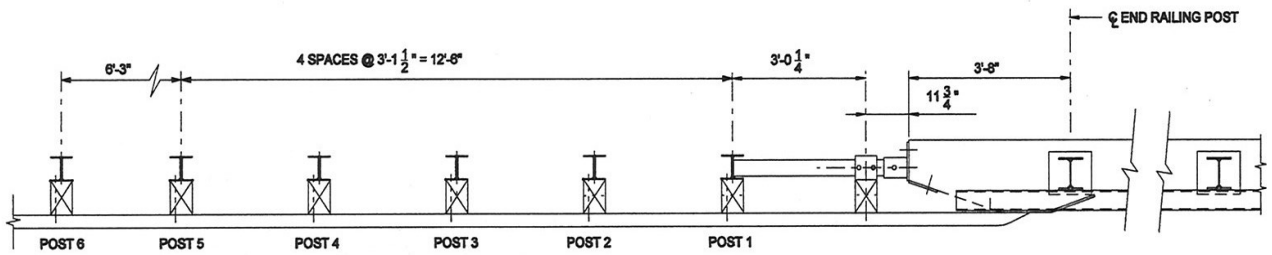

PLAN VIEW FOR THRIE-BEAM TO
CONCRETE BRIDGE RAILING TYPE TF-2

INDIANA DEPARTMENT OF TRANSPORTATION

THRIE-BEAM TO CONCRETE
BRIDGE RAILING TYPE TF-2

MARCH 2005

STANDARD DRAWING NO. E 706-BRTF-12

RICHARD L. VONDLEHN REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

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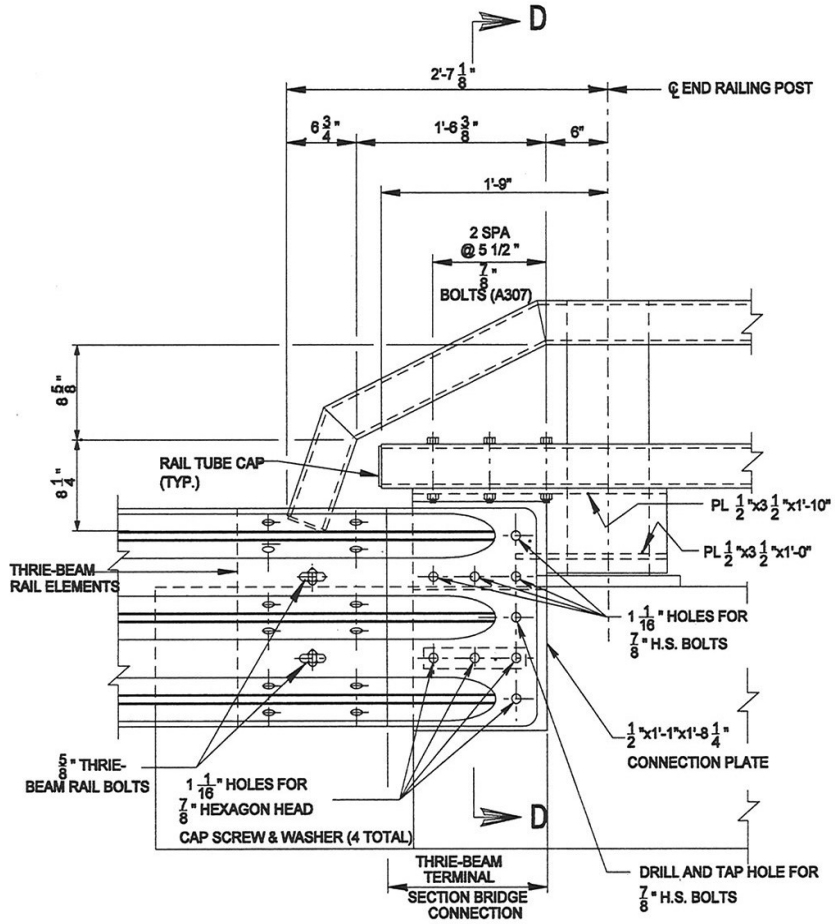

DETAIL A

NOTES:

1 SEE STANDARD DRAWING E 706-BRTF-14 FOR SECTION D-D.

INDIANA DEPARTMENT OF TRANSPORTATION

THRIE-BEAM TO CONCRETE BRIDGE RAILING TYPE TF-2 TRANSITION CONNECTION

MARCH 2005

STANDARD DRAWING NO. E 706-BRTF-13

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

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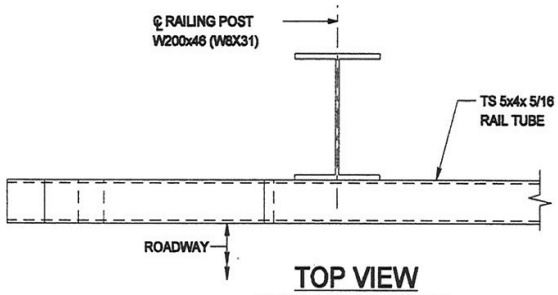
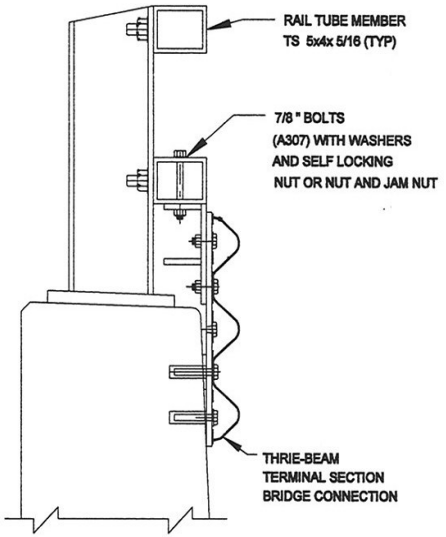


TOP VIEW
(CONCRETE CURB NOT SHOWN)



SECTION D-D

INDIANA DEPARTMENT OF TRANSPORTATION

THRIE-BEAM TO CONCRETE BRIDGE RAILING TYPE TF-2 TRANSITION CONNECTION

MARCH 2005

STANDARD DRAWING NO. E 706-BRTF-14

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

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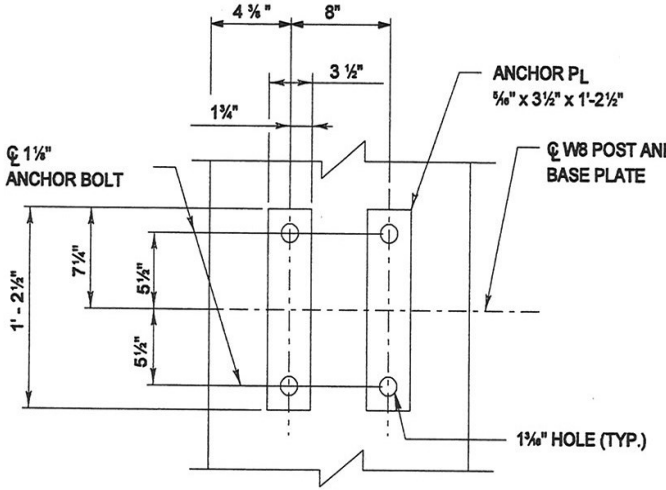
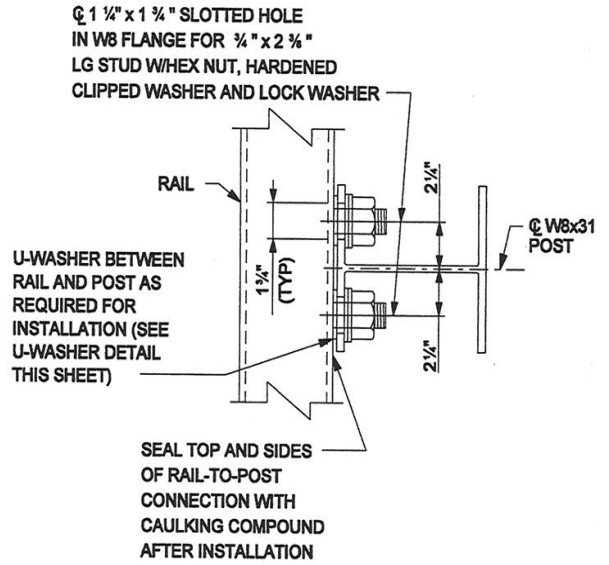
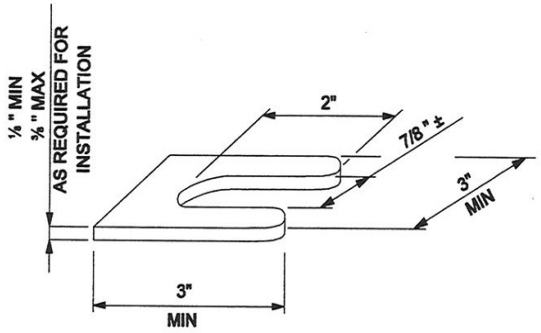


ANCHOR BAR DETAIL



RAIL TO POST DETAIL



U-WASHER DETAIL

NOTES:

1. THIS U-WASHER IS PROVIDED TO ADJUST FOR "FIT" PROBLEMS IN THE FIELD.
2. TIGHTEN POST-RAIL CONNECTIONS TO SNUG TIGHT CONDITION ONLY.
3. PROVIDE ONE U-WASHER PER STUD AS REQUIRED.

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TYPE TF-2

MARCH 2005

STANDARD DRAWING NO. E 706-BRTF-15

RICHARD L. VONCLEVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER
DESIGN STANDARDS ENGINEER

DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

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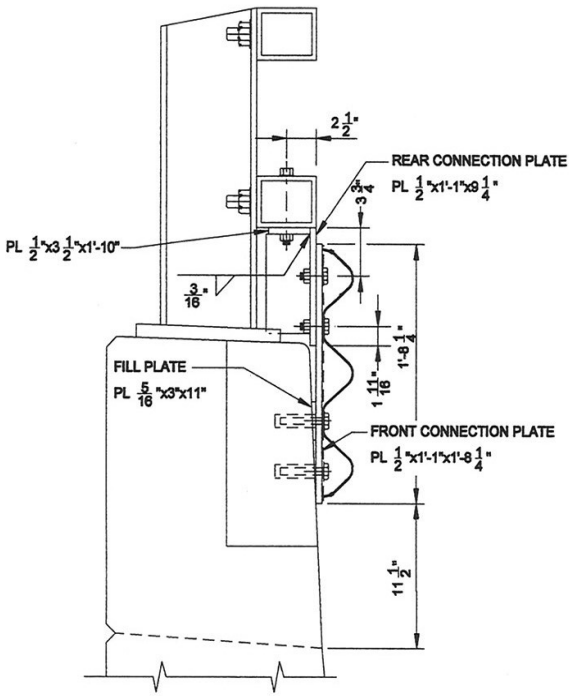
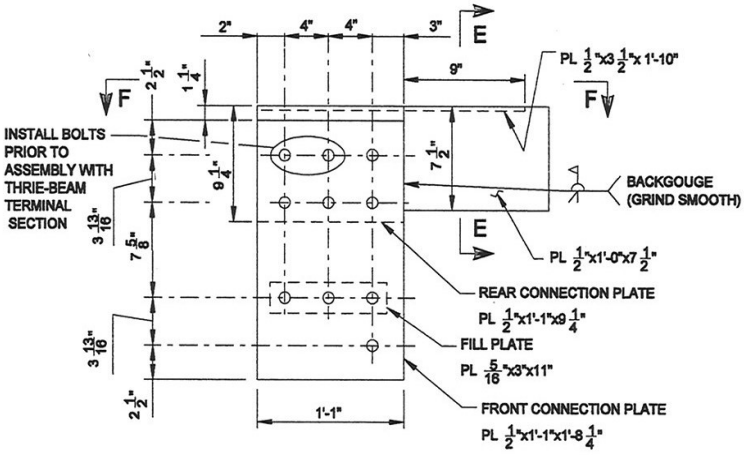


END VIEW



ELEVATION VIEW

CONNECTION PLATE ASSEMBLY DETAILS

NOTES:

1. See Standard Drawing E-706-BRTF-18 for Sections FF and EE.

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TYPE TF-2 MISCELLANEOUS DETAILS

SEPTEMBER 2005

STANDARD DRAWING NO. E 706-BRTF-16

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

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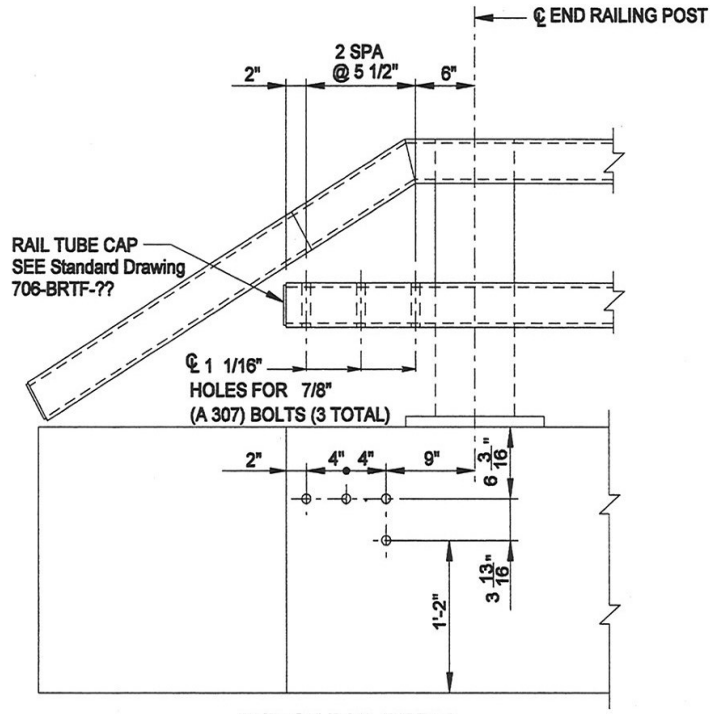
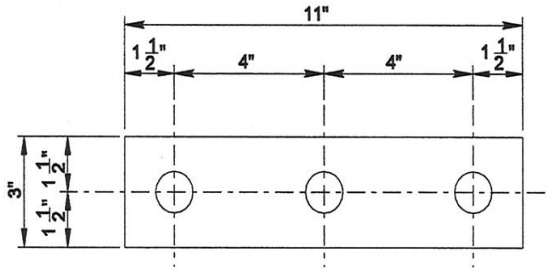


END OF RAIL DETAIL
(CONNECTION PLATES NOT SHOWN)



FILL PLATE DETAIL

CONCRETE PLATE ASSEMBLY DETAILS

INDIANA DEPARTMENT OF TRANSPORTATION
CONCRETE BRIDGE RAILING
TYPE TF-2
MISCELLANEOUS DETAILS
SEPTEMBER 2005
STANDARD DRAWING NO. E 607-BRTF-17

RICHARD L. VANCLEVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER
DESIGN STANDARDS ENGINEER

DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

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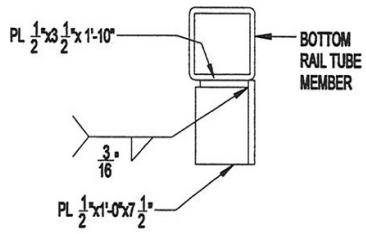
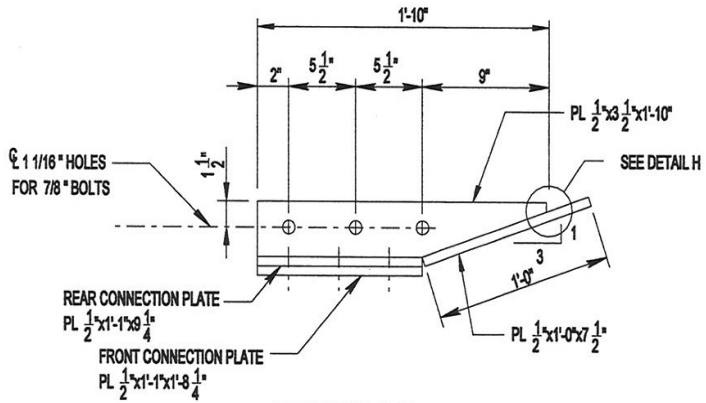
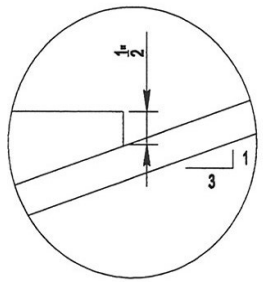


SECTION E-E



SECTION F-F



DETAIL H

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TYPE TF-2 MISCELLANEOUS DETAILS

SEPTEMBER 2005

STANDARD DRAWING NO. E 706-BRTF-18

REGISTERED RICHARD L. VANDELEENE No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

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